sputnik

3 March 1970 MONTHLY DIGEST

AUSTRALIA	0.45c	FINLAND	Mk 2.00	NEW ZEALAND	0.45c
BELGIUM	Frs 25 0	GREECE	Drs. 15 00	NORWAY	Kr 4.40
BRAZIL	U.S. 50c	HONG KONG	U.S 50c	PAKISTAN	R 1.50
BRITAIN	S 3/6	HUNGARY	F 12	POLAND	Z 1
BULGARIA	L 0.70	INDIA	R 3.60	RUMANIA	L 4.85
BURMA	KT 2 00	INDONESIA	R 13B	SINGAPORE	$ 1.55
CANADA	$ 0.50	IRAQ	Pts B 15B	SWEDEN	
CEYLON	R 2.75	IRAN	U.S 50c	SYRIA	
CZECHOSLOVAKIA	Kr 6.40	LEBANON	Pl 1.50	U	
DENMARK	Kr 3 75	NETHERLANDS	G 2.00		

AVIAEXPORT

OFFERS

tubes

forgings

stampings

castings

from titanium and other heat-resistant and light alloys
FOR ALL TYPES OF AIRCRAFT from HELICOPTERS to SUPERSONIC PLANES

For details write to

AVIAEXPORT

Smolenskaya-Sennaya 32/34

Moscow G-200

Telegraph address:
Aviaexport, Moscow
Telephone: 244-26-06
Telex: 257

CONTENTS

Letters to the Editor

I am very fond of Russian music, and while studying your most melodious language, I was touched by the lovely words of the song "Podmoskovnyie Vechera". It was very popular in England then and many people hummed the tune, but could not sing it because they did not know Russian.

For the pleasure and benefit of my friends I then made a translation of the song. Of Polish origin, I was able to sense the melancholy of the time and situation and feel myself there to witness the beauty of the Moskva River flowing lazily in the moonlight. Thus I was able to make a very faithful translation, following almost word for word the Russian text.

In the September, 1969, issue of SPUTNIK you gave the readers the music and the Russian text of "Podmoskovnyie Vechera", together with the English phonetics.

I feel that your readers would be very happy to understand the words.

Alexander Pole-Noble, London, England

Thank you for your letter, Mr. Pole-Noble, and for your translation of the song. We quite agree that it is a good idea to give readers an English version, but as there is already a translation that has been published in a number of Soviet journals and newspapers we feel that it is as well to give that one to avoid confusion.

Editors

MOSCOW EVENINGS

Not a whisper's heard,
not a rustling sound,
Now the woodlands sleep till the dawn.
Words cannot be found for this charm profound,
Moscow woods from the eve till morn.
Placid streams I see and they seem to be
Moonlight's silver threads through the dells,
Half-heard melody,
lingering rhapsody,
Over Moscow lies twilight's spell.
Tell me, darling, why your sweet glance is shy,
Why you hang your head when I'm near,
I can never tell,
yet must ever tell
How my soul longs for love, my dear.
Faint horizon's light in this fading night,
Deep down in your heart you must know
You'll recall the sight of this first soft night
Summer down, Moscow's amber glow.

Translated by Tom Botting

I cannot hide my great admiration of SPUTNIK. I think what you are doing will favour international peace.

Fawaz Asowry, Aleppo, Syria

I am a stamp collector, so I always enjoy your articles on Russian stamps which I admire not just because of the subjects but especially because they are of such outstanding graphic quality, and so many of them honouring universal giants like Pushkin, Shaw, Burns and others.

Your wonderful illustrated pages on architecture, arts and nature are also welcome. But let me suggest that some day you may also have an article, after that one I appreciated much about the Moscow Metro, about the good old trams that so many people around the world are nostalgic about, since they are disappearing in most towns where politicians subservient to the interests of the bus industries have called them obsolete and had them replaced by the so-called "modern" diesel buses, which in fact are such a nuisance, so noisy and airpolluting and "stuffy". In one of your '68 issues you mentioned a tram factory in Riga.

In England there is even a society campaigning to have trams operating again, which has succeeded in Manchester, I read in a recent number of the Daily Telegraph. The are influential people trying to prove that conversion to the tramway system is the only way out.

J. C. Vieira da Cunha, Santos, Brazil

I ought to write and tell you how much I appreciate your magazine. I am sure you would be glad to know it is gaining popularity and enthusiasm among those who have seen it in India.

A. S. Sharma, Gwalior, India

I was delighted by the articles in SPUTNIK. Your magazine certainly helps the young people to cultivate healthy relations towards each other.

I would like to congratulate you on the selection of materials published.

Madan Koirala, Katmandu, Nepal

I read your magazine with great interest. I am a former ballerina and am therefore particularly pleased to see articles on art and especially on ballet, although I am happy to read any information about what is happening between Brest and Vladivostok.

In your vast country there is nothing that is not worthy of interest. One lifetime is not long enough to enable a person to get to know even one little bit of it.

Your photographs are real works of art.

I am glad that there exists such a magazine as SPUTNIK.

Gerta Sangs, Nordseebad, West Germany

PEN-FRIENDS WANTED

I write this in the name of my comrades, the students of the Technical School of Foreign Trade. We learn English and Russian and would very much like to correspond with young people all over the world in these languages. I, myself, am 17 years old and am interested in music, sports, books, travel, coins. I can correspond, besides English and Russian, in Spanish also.

Halina Nowak, 21 Jaraeza Street, Lodz, Poland

I am a young doctor in the medical profession having dedicated my life and experience to the sick, poor and distressed people of India. I am extremely keen on exchanging correspondence with people from foreign countries, and I promise to reply to all readers of SPUTNIK who would care to write to me.

Dr. D. James Jr., Post Box No. 16706, Calcutta 27, India

I am a young qualified nurse of 27 and work as secretary nurse with Dr. D. James Jr. I would welcome pen-friends from all parts of the world, who are either nurses or doctors.

Miss Hunnee Darlyn, c/o Dr. D. James Jr., Post Box No. 16706, Calcutta 27, India

I am 20 years old and I am studying biology at the University of Brasilia. I know English and Portuguese and I would like to correspond with pen-pals from all over the world. My interests are: stamps, coins, postcards, cinema, literature, etc.

Carlos Roberto Ceron, Universidade de Brasilia, Brasilia-D. F., Brazil

Continued on p. 174

sputnik

APN, 2 PUSHKIN SQUARE, MOSCOW, U.S.S.R.
The Sputnik is a digest published in English, French, German and Russian by the Novosti Press Agency.

Dear Reader,

SPUTNIK is a vital Soviet magazine.
SPUTNIK introduces you to the best in Soviet magazines and newspapers — in condensed form.
SPUTNIK tells you what people are talking about: the latest in science and mechanics, important political issues, economic problems, Soviet writers, travel in our country.
SPUTNIK contains: picture stories · facts and figures · memoirs · fashions · recipes · humour
SPUTNIK: read — be informed! We welcome your questions, comments and suggestions which will be reported in the Letters Section of **SPUTNIK**.

Sincerely,
The Editors

Front Cover

The dense virgin forests, endless northern tundra and magnificent rivers of Siberia add up to a paradise for hunters and anglers (for article on Siberia see pp. 48—71).

PHOTO AND PICTURE CREDITS Andrei Borodayevsky, Alexei Zhigailov, Oleg Makarov, Lev Nosov, Sergei Petrukhin pp. 50—71; Klavdia and Vladimir Vdovin pp. 73—80; Lev Borodulin pp. 97—101; Andrei Nekrasov p. 124. Technical Editor Berta Bresler.

OTAVA · HELSINKI, FINLAND

SPUTNIK, the first Soviet digest, will be on the newsstands — or in your mailbox — every month. To be fully informed, read SPUTNIK, the digest magazine that reaches every aspect of Soviet life. Exciting reading for everyone in SPUTNIK: condensed articles by writers, poets, scientists, military experts, sport stars. Everybody from statesmen to the man in the street. Know the other side of controversial issues, meet the Soviet man in the street (women and children treated deferentially), keep abreast of scientific developments, get an inside line on sports, etc.

The Russian Digest condenses articles from 11,000 Soviet newspapers and magazines. You get the pick — in convenient, easy-to-read digest form.

HIS NAME IS ON THE MOON

One of the craters on the Moon has been named after Yuri Kondratyuk. Not many earthmen have been so honoured. Copernicus, Kepler . . . and now Kondratyuk

by Vladimir LVOV

from KOMSOMOLSKAYA PRAVDA

He was the first to prove that a rocket would not be able to go beyond the bounds of earth's gravity unless it dropped its fuel tanks.

It was Kondratyuk's idea to create intermediate refueling stations in space in the form of artificial satellites.

Yuri Kondratyuk's book *Conquest of Space* came off the press 40 years ago. At that time the author lived in Novosibirsk and worked as an engineer designing elevators. Only a few copies of the original edition exist today.

The space era began when the USSR launched the world's first artificial satellite, Sputnik I, on October 4, 1957. In the United States the National Aeronautics and Space Administration (NASA) experts were assigned to study all Soviet literature dealing with space exploration. A special bibliographical department was set up at the U.S. Congress Library in Washington, headed by Dr. William Shelton. Evidently it was Shelton himself who recommended a thorough study of Kondratyuk's book when American engineers started their Apollo programme.

Kondratyuk's ideas received a mixed reception from NASA experts. The group headed by John Hoobolt found them interesting and useful, but Werner von Braun's group did not agree. Finally the former group got the upper hand. Hoobolt did not conceal the fact that he had borrowed certain technical ideas from the Russian engineer, who back in 1929 had envisaged a method of landing men on the Moon.

In the summer of 1969 *Life* magazine quoted Hoobolt as saying that when an Apollo spaceship was heading for the Moon he was thinking of the Russian, Yuri Kondratyuk, who had worked out the route the American astronauts were following.

* * *

Yuri Kondratyuk, son of a schoolteacher, was born in 1900 in the West Ukrainian town of Lutsk. While still a schoolboy he studied higher mathematics on his own. At that time he had never heard of Konstantin Tsiolkovsky, the pioneer of Russian astronautics. However, in 1916 he independently conceived the idea of a jet-propelled flight in space. That same year he finished several chapters of his monograph entitled *Conquest of Space*, and one of the chapters contained the formula of the rocket's flight.

"From that time onward space flight became the principal aim of my life," Kondratyuk wrote later.

1918 was a grim year for the young Soviet Republic. The Ukraine was occupied by German troops and White terror was rampant. Yuri Kondratyuk, then a fifth-year student at Kiev University, fled to the territory controlled by the Red Army and took a job as an oiler at a locomotive depot.

The young man's technical abilities did not remain unnoticed. In 1925 he was appointed chief designing engineer at an elevator plant in the south of Russia. It was at that time that Konstantin Tsiolkovsky's book *Space Exploration* fell into his hands.

This book made a tremendous impression on him, for many ideas, formulas and hypotheses coincided with what Kondratyuk had thought out himself. He wrote a letter to Tsiolkovsky in which he said among other things: "I am surprised at the affinity of our ways of thinking on a multitude of problems, including those of philosophy . . . This, apparently, is not accidental, and in general my pattern of thinking is in many respects like yours . . ."

Tsiolkovsky answered and from then on Kondratyuk considered himself his disciple, a continuer of the cause initiated by a once unknown teacher from Kaluga.

These were two typically Russian devotees of space science — although there is now a Tsiolkovsky museum in Kaluga and his name is known to everybody in this country, while only a few specialists are familiar with Kondratyuk's book. The two men had similar ideas; however, a number of chapters in Kondratyuk's work advanced several new theories that enriched the science of space flights.

Yuri Kondratyuk's Book, which contributed to the success of the American lunar landing in July, 1969.

Kondratyuk, naturally, was anxious to see his ideas published; but that was not easy in a country which had just begun to heal its wounds, following the devastation caused by the Civil War. Kondratyuk asked a Moscow professor, Vladimir Vetchinkin, an expert on aircraft designing, to help him, and having studied Kondratyuk's manuscript Vetchinkin was con-

Yuri Kondratyuk. Like Kepler and Copernicus, he was far ahead of his time. And his name, like theirs, has been immortalised.

vinced that the author was a gifted theoretician and inventor. Professor Vetchinkin began to prepare the work for publication and wrote a preface to and a review of Kondratyuk's treatise.

But Professor Vetchinkin did not succeed in persuading Moscow publishers to accept the book. Space fantasies, no matter how brilliant and well-founded on exact mathematical calculations and real engineering schemes, could not be included in any publishing plans at the time.

In 1927 Kondratyuk moved to Novosibirsk, got another job as an elevator designer and 18 months later published his work at his own expense, with money earned as a bonus for having invented a new kind of scoop and automatic feed.

Kondratyuk was the first to project the idea of using a winged rocket for going into orbit and returning to earth. After a thorough analysis he reached the conclusion that this type of rocket would provide a better ratio between the weight of fuel and the weight of the whole craft. Tsiolkovsky developed his idea and more than once remembered Kondratyuk's pioneer exploits in this field.

Kondratyuk also calculated a version of sending a manned expedition to the Moon via a lunar orbit. It was this version that was successfully used by the Americans in their Apollo programme.

Kondratyuk suggested a grand programme of space exploration based on mankind's vital needs. He did not say a word about "super-weapons" but wrote about utilizing the boundless resources of solar energy, changing the climate of whole continents and meliorating land on an unprecedented scale.

His ideas were always accompanied by concrete designs and engineer's solutions. Many of his suggestions are still awaiting implementation.

Some 40 years ago Yuri Kondratyuk demonstrated a deep knowledge of many aspects of modern space projects. He had a unique gift of theoretical and technical foresight and it is easy to imagine the great contribution he would have made to the conquest of space had he lived now, in the cosmic era.

When the Second World War was in progress and the Hitler hordes were advancing on Moscow, Yuri Kondratyuk volunteered for the front and shortly afterward was killed in action. He was almost 42.

A Thousand Shakespeares in the Year 2000?

An interview
with Dr. Igor BESTUZHEV-LADA,
a social forecaster

from LITERATURNAYA GAZETA

What aesthetic discoveries do you think might be made by writers in the future?

If I knew the answer to that, obviously they wouldn't be discoveries, would they? You can chart the future development of literature perhaps, but not "discoveries". Once the Leningrad poet, Vadim Shefner, was asked if he could say what poetry would be like 20 years from now. He replied he could not. Later he said that if he had known the answer to that question, then he himself would write the kind of poetry that would be written 20 years hence.

What then can be predicted in the field of literature?

For one thing, by the year 2000, the world will have doubled its population and presumably the number of writers will have doubled correspondingly. The Polish writer, Stanislaw Lem, takes a gloomy view of this "cultural explosion", holding that when the world has thousands of Raphaels, Mozarts and Fermis, no one will be able to keep up with even the major works of his time.

It is an interesting thought, but I disagree. In each age there can be only one Shakespeare, one Dostoyevsky, and there is no danger of being swamped by geniuses.

Would you say that the quality of artistic works rises from century to century?

Well, artists of the past are generally paid greater homage than our own contemporaries, as you must be aware. There is no present-day playwright who has been called a Shakespeare. Besides, the history of culture shows that there have been several golden ages in various civilisations, when long-accumulated quantitative changes exploded into qualitative leaps. At present science and technology are experiencing such a surge. Perhaps the turn of the arts will come in the 21st century?

There are at present acute problems as regards the dissemination and storage of information. Are you aware, for instance, that between 60 and 80 per cent of the books in the world's largest libraries have never been requested by anyone, and that of the balance, half have been taken out only once or twice? Hence, this swelling multitude of books works like Stephenson's steam engine, with an efficiency of only six to eight per cent. Consequently, new methods of storage and dissemination must be found.

The late Soviet scientist, Dr. Georgi Babat, dreamed of a system of information centres which would replace libraries. An electronic element, 0,06 cubic inches in volume, would be capable of storing all the Russian literature ever written. Babat's idea was that an electronic catalogue would locate the required book and project the text to the client's TV set. If desired, it could be accompanied by music, pictures or commentaries.

Would it be correct to speak of the forecasting function of literature?

Forecasting is an organic function of science. To my way of thinking, however, it is as organic to literature. Sometimes it seems to me that the greatness of a writer should be gauged by the farsightedness of his ideas. Didn't Dostoyevsky, Tolstoy or Shakespeare meditate over problems that are vital today? Isn't this a form of foresight?

Of course, in speaking about the forecasting function of fiction, we usually refer to science fiction. Students of literature have measured the effectiveness of the scientific and technological ideas advanced by some writers. Of Jules Verne's 108 science fiction ideas, 64 have already come true, another 34 have been found practicable and only 10 erroneous. Of H. G. Wells's 86 such ideas, only nine have been proved erroneous. The Soviet science fiction writer, Alexander Belayev, has put forward 31 erroneous ideas out of a total of 50. In one

of his novels an American S.F. writer described the designing and testing of the world's first atomic bomb long before it became a reality — and in such great detail that he incurred suspicions of espionage.

Sometimes literature steals a march on science in loking into the future. Writers were the first to discuss man's place in the cosmic scheme of things. So far, neither sociologists nor economists can prognosticate what fully cybernated social production will be like, but writers are already trying to provide the answer . . .

Unique Fourteenth-Century Manuscript

by Natalya Melnikova
from the magazine NAUKA I ZHIZN

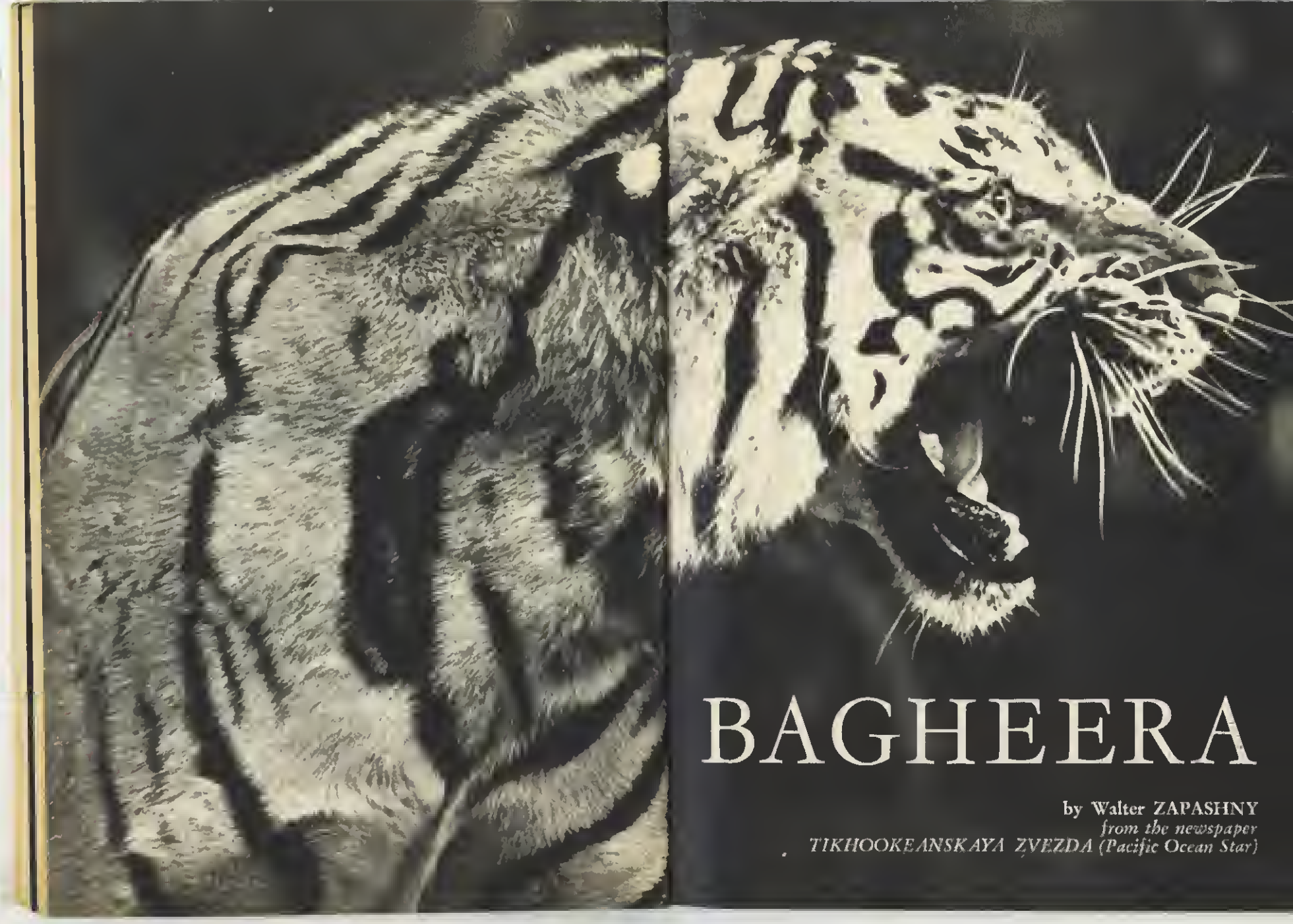
In February 1960 the Rare Book and Manuscript Department of the Scientific Library at Moscow University, of which I am in charge, acquired a rare fourteenth-century manuscript.

It is a 300-page selection from the Ostromirovo Evangel, written on parchment in straight, clear-cut style, with numerous cinnabar initials in a variety of intricate patterns. The manuscript contains four miniatures painted on a gilt background which brings out the soft colours so typical of ancient iconography (See photo). The miniatures are protected by crimson flaps of silk. The wooden covers are bound in calfskin, embossed with diamond-shaped figures containing two intertwined dragons.

This unique book is now a part of the collection of early Russian writing which historians and philologists have brought together over the years. It is of considerable scientific importance for the following reason.

The oldest Russian literary relic — the Ostromirovo Evangel — which was copied by the clerk Grigori in the eleventh century is in possession of the Saltykov-Shchedrin Public Library in Leningrad. Now, with the discovery of the fourteenth-century manuscript, which is very well preserved, scholars have a wider opportunity to make a linguistic study of that ancient text.

The find is especially interesting since it comes from southern Russia which to date has yielded few such discoveries.



BAGHEERA

by Walter ZAPASHNY
from the newspaper
TIKHOOKEANSKAYA ZVEZDA (Pacific Ocean Star)

"The life of an animal tamer means every day in the ring, where he has no right to be knocked out, since that knock out maybe the first and the last in his life," writes Walter Zapashny, now a well-known tamer of beasts of prey and in the past equally well known as an arcrobat. When he gave up acrobatics, Zapashny got the idea of becoming an animal tamer and bringing some of the most dangerous animals there are into the arena — lions, tigers, panthers, jaguars, and lynxes.
The first "actress" who was invited to be a member of his troupe was a tigress. Here is an extract about her from Zapashny's book RISK. STRUGGLE. LOVE.

BAGHEERA

The head of the zoological centre summoned me to his office.

"I have some bad news for you, Walter. We have discovered that your tigress Gerta is a man-eater. She has been responsible for many deaths." I was struck dumb by the news.

This conversation took place a long time after I made the acquaintance of Gerta, a tigress bought in Holland.

It was winter when I first saw her. I was hurrying along the platform of a railway station near Moscow, the crisp snow crunching underfoot. I was so impatient to see the tigress which was to take part in my number "Among the Beasts of Prey". This was the first animal, the first pupil, and my first experience as a teacher.

Have you any idea how much a tiger weighs? The biggest of the five at the zoological centre weighed 500 kilograms — a whole half a ton! But they offered me another one, a tigress called Gerta. The vet accompanying me said: "Your one tiger is equal to all four of the others. She has quite a tough character."

I came up against the tigress's character right away. She lay in the far corner of the cage, her heavy head on her paws. I asked the attendant to put the cage in an open air enclosure so that the tiger would come out and I could get a proper look at her. The doors were opened but Gerta did not budge. We called her, tempted her with meat, banged on the bars, but to no avail.

We were about to leave to have our dinner when Gerta walked out. And how she came! Her back legs almost slid along the floor as she dragged out each step. Her front paws stepped so cautiously and lightly that if she had been walking on broken glass it would not have injured her paws in the least. Her yellowish-green eyes gazed at us contemptuously. Suddenly she tensed her body and with all the force of a steel spring leapt forward and sideways, with a noiseless, graceful movement.

"Now we've seen what she's like!" my companion said to me.

Yes, I had seen, and having done so I was determined to have her. I signed an undertaking on the spot that I would observe the rule of 30 days' strict isolation, the cage was loaded onto the lorry, the tigress was mine.

I worked with Gerta for more than a month, getting her used to me, but she did not once come near enough to take the meat from the end of my stick, not once did she touch the milk or the eggs. I realised that it was impossible to burry.

Once, armed with all the essentials, I went to see Gerta in the animals' quarters. I was lucky. She was in the open air enclosure. When she saw me she got up and wanted to hide in her cage. But I was quicker than she was and through the railings tugged at the rope to bang the door shut under her very nose. Gerta recoiled and growled quietly.

I hardly bad time to jump away when before my chest there flashed a paw with claws spread wide. I brandished the stick ready to whack out at the tigress's nose. She leapt back. I pulled out my revolver and aimed at her. She fell back immediately and, as if biding her time, pressed against the floor of the enclosure. I thrust the stick between the bars and made a feint to the left. The tigress drew her head into her shoulders and rising in fear on her hind legs pressed still more closely to the wall. I shouted at her. Gerta did not stir. She was afraid of me! Well, I was so excited that I forgot there was no one about and shouted: " Look! Look! Look! She's afraid of the stick and the revolver!"

But before I could turn round the bars shook as though they were going to fall apart. Ducking involuntarily, I saw that the tigress, having jumped in my direction, was now clinging to the wall of the enclosure. She had thrust ber terrible claws between the bars and was waving them in a frenzy.

"No good, my dear," I said to her, rubbing the sweat from my brow.

I understood that it would be quite a difficult matter to train this powerful, intelligent and cunning animal. Then my old

acquaintance, Yevgeni Plakhotnikov, a trainer of considerable experience, came to the rescue.

* * *

The tigress walked along by the wall and I followed her. Suddenly she stopped, turned round and gave me a look. I froze in my tracks, expecting her to walk back towards me, but she went on, a little slower than before. I decided that this was enough for the first visit and was about to leave when Gerta turned her head towards me again and made a kind of mewing sound: "A-oo-oo!" In reply I said softly: "Gerta, Gerta, ai-bra-v-o-o!" A tamer usually speaks in a kind of drawl, accustoming the animal to an affectionate tone of voice. But my tone made no impression whatever upon Gerta.

The sweat was running down my forehead and I realised that I was too tensed up. All the same, forcing myself on, I went up to the tigress and repeated: "Gerta, bravo, Gerta!" She glanced down, laid her ears back, but immediately relaxed and walked slowly towards the door. At that moment I was itching to leave the cage.

Suddenly she turned round sharply and I realised with horror that she had been fooling me. Having placed herself between me and the exit and cut off my retreat, she raised her head, flexed the muscles of her powerful body and extended her graceful tail. There seemed to me to be something mocking, something threatening about her bared teeth. Her yellowish-green eyes narrowed. Gathering her rear legs beneath her she sprang high into the air towards me.

It was like an electric shock. Even if I had tried to jump aside or back I wouldn't have got away with it. What helped me was the reflexes I had built up during my many boxing bouts. The instinct of self-defence came into play instantaneously. I leapt towards the infuriated beast, hit her on the head with the stick, and leapt over her, landing on my hands. I jumped up and darted through the open service door like a mouse which has been saved from a cat.

At that moment Plakhotnikov trained a powerful jet of water on Gerta's head. Stunned, trying to beat off the water and search for me at the same time, she sorang at the bars, just where Plakhotnikov was standing. But he dodged back, laughed loudly and said to me: "Well done! You showed her!" Then he shouted: "In you go, in you go, just once more!"

I pushed open the door, Gerta bared her teeth, pressed herself to the wall and growled. I stood there for two or three seconds and then, feeling Plakhotnikov's hand on my shoulder, I began to back out. As soon as the door shut Gerta jumped at it again with a terrible snarl, choking with her own impotence.

It's a virtual impossibility to set a man-eating tiger to work in the circus. But Walter Zapashny did it — with Bagheera, shown second from left.

It was my first meeting with a real tiger. And neither of us had encountered such a beast before.

* * *

The stubborn efforts to train the tigress continued.

One day Plakhotnikov asked me: "What kind of underwear have you got on, silk or wool?"

I was rather taken aback and asked: "What does it matter?"

"A trainer should always wear silk underwear. If Gerta gets hold of you it will be easier for the doctor. Apparently there is less infection in a wound if you have silk!"

I remember that talk when some time later I lay on the operating table and heard the surgeon ask: "What underwear did you have on when you were attacked?"

Another time, when I was thoroughly worn out by my efforts to tame Gerta, my older colleague looked at me and asked: "Don't you think young man, that it would be better to say goodbye to Gerta?"

I shook my head. Not until I had tried all possible methods of training her! I had already taken a gamble and did not want to give up, but I said to Plakhotnikov: "What an animal she is, that Gerta! I can't imagine why they gave her such a name. As you say it, you think of some calm, rather stout lady. But she's some kind of a demon! She's not Gerta, she's Bagheera."

I have no idea why the name of the cunning Black Panther from Kipling's Mowgli came into my head, but from that day on Gerta was Bagheera.

* * *

All the same we made noticeable progress. Sometimes now Bagheera took pieces of meat from the stick. Sometimes she decided not to attack me. And we found a favourable side to Bagheera's character: her anger died down as swiftly as it appeared.

Then suddenly came this astounding news: my tigress was a man-eater.

"Don't get worked up, but listen carefully to me," said the head of the zoological centre.

This is what he told me.

Once the people living in a remote village on Sumatra found that there were tigers in the countryside around. The tigers attacked a peasant and tore him to pieces. Before long another man had disappeared and then a third. The villagers discovered that the raiders were a family of three tigers, a mother and two cubs. The terrified villagers begged that experienced hunters be sent to the district, and finally the mother and one cub were killed. The second cub, a female, was wounded and got caught in a trap. Then she was sold to a firm that supplied wild animals to zoos and circuses.

After a time the young tigress came into the possession of a Dutch tamer, Klant. Gerta soon displayed her nasty habits, and mauled two of Klant's assistants, and after that his wife. The tamer decided to get rid of this dangerous animal and, representing it simply as an untrained beast, sold it to the Soviet Union. I listened in dejected silence, realising the danger I had been in every minute. So far everything had gone off all right, but the moment might come when Bagheera

Bagheera is a thoroughly modern animal. She loves a ride on a motorbike. As for the lead, that's for psychological effect — and then only as far as the general public is concerned.

would attempt to get even with me.

So we had to part. I had to admit that I was powerless in the face of an animal which I had already begun to tame. But surely that was cowardice! These thoughts flashed through my head as I listened, and at last I said: "Thank you for this highly valuable information about my pupil. I shall take everything you say into consideration, but I shall continue the training."

Surprised by my answer, he tried to talk me out of going on with it, even threatening to lay down a ban on my working with Bagheera. I got excited and argumentative, and in the end my impassioned speech evidently made an impression.

Now I decided to hold several rehearsals without going into the cage. For this purpose I had a glass wall installed on two sides of the open air enclosure. As before, the tigress tried to catch me, but, after knocking against an invisible barrier several times she began to act with greater caution.

This method of training suited me down to the ground, and there was no element of danger whatever.

Tapping with a stick on the pedestal on which the tigress was supposed to sit, I teased her with another stick saying: "In your place, in your place!" Bagheera pounced on the second stick and step by step advanced towards the pedestal, put first one paw upon it, and then another. As soon as she was on the pedestal I stopped worrying her and offered her a morsel of fresh meat. I gave her a drink and also some eggs to eat while she was still up there. I went over these rudiments five or six times a day, and eventually Bagheera realised that in order to shake off this persistent and relentless man she had to keep on clambering onto that damned pedestal. As soon as she had done it she would be left in peace and given some meat.

Bagheera turned out to be a clever animal with an excellent memory. Now I am often surprised at her powers of comprehension just as, to begin with, I was at her volatile moods. This handsome and dangerous creature gradually began to yield and to bring me increasing pleasure. Nevertheless, I still felt there was something false in this submissiveness. She continued to nurse a ferocious hatred for me and was waiting for the moment when she could take her revenge. Meanwhile the posters were announcing "Forthcoming Attraction". My debut with Bagheera was not far off.

* * *

The struggle raged on. At one routine rehearsal the tigress greeted me in the ring with surprising tranquillity, neither growling nor baring her teeth. I took a step towards her, then another . . . She backed. I raised the stick. But it was already too late: she sank down by the door, cutting off my exit, and then got ready for the spring. I just had time to realise that there was no salvation behind me or to either side. I pressed against the bars and jumped forward at precisely the same moment as Bagheera did, diving beneath her. The tigress overshot me, and while she was trying to make out where her enemy was I was already banging the door from outside.

The next time I went in with the tigress I had it all thought out well beforehand, and took a flare pistol with me, while an attendant stood with his hand on the light switch. My precautions proved justified. Bagheera did not dally, but leapt straight at me as soon as I got into the cage. But at that very second the attendant switched off the light and I shot a rocket into the face of the tigress.

The third time she decided to be a little cleverer. She allowed me to come in and even to work for a little. When I took hold of the pedestal on which the animals usually sat at rehearsals and performances, Bagheera suddenly crouched low. Waiting for the moment when I threw down the whip, the tigress again launched herself into the attack, but it didn't come off. That time I used the pedestal for defence. The steel prongs of its base caught hold of her face like a trap. A thunderous bang on the plywood top of the pedestal deafened Bagheera. The tigress, it seemed, was pacified. We began to rehearse. But once again she was being very cunning. Again she was biding her time.

One day props were being painted for the premiere. The unaccustomed smell irritated the animals and they became restless. Several times I had to calm them down. During one of the rest periods Bagheera leapt at me from behind, sank the claws of her front paws into my shoulders and began to rip at my flesh with her hind claws. Unarmed, single-handed combat with a tigress is no joke. And although I am a master of sport in acrobatics, gymnastics and weight-lifting, I found the going hard. I summoned up my knowledge of jujitsu, grabbing hold of her whiskers and twisting round her head onto the back of my own neck . . . Then help came.

I had 26 wounds.

In another six weeks I went into Bagheera's cage again.

* * *

In another few years Walter Zapashny was a famous animal tamer. His wife Marina proved a fearless assistant, and in the tiger troupe with which Zapashny now performs Bagheera is one of the stars.

Aeroflot Goes Electronic

by Vartan SIMONYANTS, director of the Central Airways Agency, Ministry of Civil Aviation

from the magazine GRAZHDANSKAYA AVIATSIYA (Civil Aviation)

All over the world computers are taking over jobs from less efficient human beings. The computer Minsk-23, in operation at Aeroflot's central office in Moscow since 1968, can book a seat on a plane faster than any clerk. But soon it will have to compete with an even more up-to-date model — the Sirena-1 — which will become fully operational this year.

Moscow's airline booking and ticket office network is the largest in the Soviet Union. Each day an average of 20,000 tickets are sold and approximately another 20,000 reserved for transit passengers in answer to telegraphed requests. The cards for 8,000 flights are processed daily.

Flying is rapidly becoming the favourite mode of transportation in the country. By 1975, it is expected that the number of passenger flights will be three times as many as in 1965.

How is this flow of flying citizens being handled? What innovations are in store for the airlines customer?

Imagine walking into the booking office, naming your destination and desired date and time of departure to the clerk and receiving all the needed information in a matter of two or three seconds: availability, flight number, time of departure, cost of ticket.

The Sirena-1 computer is capable of all this and more. If

there are no vacant seats on the desired flight it immediately locates and provides all the information on the next closest flight. If several tickets are purchased at once, the computer adds up the total cost. At the end of a working-shift the clerk pushes a button or two and the machine obligingly totals up the daily receipts, obviating the need for daily accounts and checking counterfoils. Sirena-1 is capable of storing information on seats of all flights out of Moscow for a month ahead, on some flights out of neighbouring airports and on a percentage of the seats on return flights to Moscow.

Sirena-1 will soon be handling requests arriving at the Central Order Bureau. Tickets it types out may be called for at the booking-office or delivered to the customer's home or place of work. The passenger only has to name the number of his order. Tickets which are not taken up within the time limit are returned or are the subject of cancelled orders and automatically go back on sale.

Sirena-1 will also be able to handle the functions of the Central Inquiry office. It will store telegraphed information on postponed or cancelled flights and transmit it to the screen. A special device answers passengers' inquiries on flight schedules, ticket prices and vacant seats for five to seven days ahead.

Sirena-1 was designed by a team drawn from several research and design institutes and headed by chief designer V. A. Zhozhikashvili. It is a large, complicated system and it will take some time to train personnel for its operation. It is expected that it will start working this year.

In the meantime, Moscow's air communications centre uses the computer Minsk-23 which is capable of storing information on vacant seats aboard 500 planes up to 20 days in advance.

This computer handles the reservations received by telegraph. In the past it took five to six hours to reply to such requests. Now the machine deals with 400 telegrams in 16 minutes. If the flight requested is sold out, the computer locates the nearest available place. The search depends on the length of flight. In case of flights to Kiev, Kazan or Leningrad, data is processed two days ahead; to Irkutsk, Chita, or Alma-Ata, five days ahead; and to Magadan or Petropavlovsk on Kamchatka ten days ahead.

In addition, on the day before departure, Minsk-23 produces passenger lists for every flight, and the day before arrival, lists of transit passengers flying in next day by any plane to any of Moscow's airports. At about 20-minute intervals the computer reports information on the number of seats occupied aboard every plane.

Besides the Minsk-23, the

Central Airways Agency uses other modern equipment which considerably raises labour productivity. One of them, the DPIDS-1, is an electromechanical remote-control device transmitting air traffic information. All data on the airliners' actual times of arrival and departure from large Soviet and foreign airports are fed into DPIDS-1's memory unit. The system stores and produces information on 700 flights (350 departures and as many arrivals).

Another ingenious machine which has come to the aid of Aeroflot personnel is the SINM-1. It provides information on available seats. One advantage of this system is that it can be used by any office, agency or airport.

In the past, if a customer requested a particular flight, the clerk had to phone through to the central booking office and check. If the flight was booked up, the whole procedure had to be repeated with another flight. To book a single seat often necessitated several phone calls.

Today the clerk presses a button on the SINM-1 and the information is instantly available. Tomorrow, man's creation, the computer will serve mankind with even greater efficiency

RUSSIAN PEARL

Popular legends handed down from generation to generation say that in olden times large numbers of pearls were obtained from the rivers of northern Russia.

Four engineers, motor-boating enthusiasts, decided to test out the legend for themselves. In charge of the party was Feodor Senichev, Master of Sport of the USSR and an experienced skindiver who had already tried his hand in the Black and the Baltic Seas and the Sea of Japan. The route was carefully planned. The three-motor-boat flotilla advanced along the River Shelon, past Volkhov and Svir, across Lake Onega and along the White Sea—Baltic Canal.

On the advice of local inhabitants the holiday-makers headed for the estuary of the River Gridina. There, in calm water beyond the shoals, they began the hunt for bivalves at a depth of 1—2 yards. They examined tens and hundreds of shells and became particularly interested in those with distorted shapes, for it turned out that in most cases they contained pearls. They were delighted at each new discovery. One pearl was large and extremely attractive—in the form of two spheres.

From the newspaper **Krasnoye Znamya**

Pyrimidines Stir Medical World

by Vadim RUSAKOV, M.D.

from PRAVDA

Recent developments in pharmacology indicate that in the near future it may be possible to treat many pathological conditions hitherto always dealt with by surgery by the administration of synthesised organic substances.

Today the appropriate treatment for acute appendictis is surgery but it seems likely that soon doctors may be able to treat this condition by far less radical means. Pharmacologists have already produced a number of drugs which can control infection and expedite the regeneration process. Among them are artificial pyrimidines — thymine and pentoxyl — which have been synthesised in Leningrad by a team of scientists working under the direction of the noted scientist Dr. Nikolai Lazarov.

Chemically, these substances resemble the natural pyrimidines which form part of nucleic acid, the basis of protein synthesis in the organism. It seems apparent that this is why they have a positive effect on both healthy and sick organisms.

An extremely large programme of experiments has demonstrated that artificial pyrimidines stimulate the organism's protective powers, its resistance to trauma, infection, hunger, radiation effects and oxygen hunger, and stimulate blood formation and the anti-bacterial action of antibiotics. They improve liver function, inhibit the destructive processes of inflammation and speed up processes of regeneration. In fact, artificial pyrimidines can be

regarded as boosters of the biological resistance of an organism to all kinds of negative effects and as important weapons in fighting disease.

Fifteen hundred experiments were carried out on animals at the Rostov Medical College before artificial pyrimidines were used in association with surgical operations on humans at Rostov for the first time in the Soviet Union.

That was in 1956. Since then the recovery of more than 4,000 operated patients, including those suffering from appendicitis, hernia, gastric ailments and diseases of the oesophagus, has been facilitated by the use of such drugs.

Now authorities at the Rostov Medical College clinic are confident that this treatment hastens the patient's recovery and eliminates many postoperative complications. Stitches can be removed two or three days earlier than usual and one of the most serious dangers in gastric and oesophageal operations — the breakdown of stitches that link such hollow organs as stomach and oesoohagus — has been eliminated. Thymine also greatly reduces the incidence of postooerative commissures, particularly after operations for appendicitis.

The use of pyrimidines has made it possible to develop new techniques in the treatment of many urinary diseases. Some patients who had been ill for long periods, even up to forty years, and who had undergone many unsuccessful operations, have been cured in this way.

The extensive use of these preparations, not only eases the patients' suffering but also reduces the period of hospital treatment and convalescence.

The experience accumulated has demonstrated the possibility of direct intervention in the course of infection and regeneration and opens up fascinating prospects for medico-biological control over the key processes in the organism which form the basis for the emergence and removal of nearly all diseases.

Medicinal control of a complicated and dangerous pathological condition such as acute inflammation of the pancreas, for which even today surgery is the normal treatment, has established that such operations are not always necessary.

In the autumn of 1968 a 63-year-old woman was admitted to the Rostov Medical College clinic suffering from acute inflammation of the pancreas. There were distinct signs of peritonitis and it appeared obvious that she should undergo an operation. The patient was prepared for surgery, but, as well, she was treated with synthetic pyrimidines. In a short time it became clear that surgical treatment would not be necessary, and nineteen days later the woman was discharged from the clinic.

Today this is common practice at Rostov. During the past four years in only three cases out of the 129 admitted suffering from acute inflammation of the pancreas has it been found necessary to operate. There is now a real basis for non-surgical treatment of a number of diseases in which surgery has usually been indicated. Examples of this are gastric ulcers, inflammation of the gall bladder, stones in the kidney and lung abscesses.

There is mounting interest in pyrimidines and their clinical application in medicine in general and in particular in surgery. Doctors in Leningrad, Kiev, Alma-Ata and Tashkent and a number of other cities in the Soviet Union are using these preparations and they are becoming increasingly popular.

There is, however, still much to learn about them and this will require profound research by medical scientists and practitioners and by experts in other fields.

Widespread interest was shown in a conference on artificial pyrimidines held in Rostov-on-Don in 1969. Most of the participipants in the conference favoured the establishment of a major research laboratory to investigate the processes of infection and regeneration. It is hoped that in time there will be an institute where this new trend may be studied on the widest possible scale. The indications are that the use of pyrimidines may produce results which medicine today cannot even suspect and open up prospects at present in the realm of science fiction.

BIRD SONGS FOR NEUROSIS CURE

"Back to Nature" is often advised for soothing frayed nerves, and this is apparently the principle applied at the Adjaria Sanatorium, a health resort at Green Cape, on the Black Sea, where bird songs are part of the cure for neurotic patients.

The sanatorium department which introduced this cure inducing sleep in insomniacs, has the rather formidable title of "psychoprophylaxis and psychotherapy". It gets results — after eight or ten treatments listening to birds trilling, under the care of Dr. Medea Abashidze, patients fall into a soothing sleep without the need of drugs.

The section also uses oxygenated infusions of medicinal herbs and fruit syrups. These "cocktails" have a good effect on the patients, being prescribed for those suffering from diseases of the blood circulation, gastritis and ulcers.

From Krasnaya Zvezda

Man the Amphibian?

by Alexander CHERNOV
from the book HOMO AQUATICUS

Can human beings become really amphibious, by adapting themselves to the ocean depths as other mammals have done? Soviet scientists, like those in other countries, are working on this problem — and it appears that there are reasonable grounds for believing it can be solved.

Breathing Water?

As frequently happens in research involving vital processes of the human body, animals are being used to help pioneer the way to discover how, if possible, human beings can adapt themselves to "breathing water".

Picture a white mouse sitting in its cage, as we saw it, in the Kiev Hydrobionics Laboratory. It is a normal cage, except for an extra door which opens into a sluice leading to an adjoining massive steel chamber. The mouse is about to move into the water-filled "house".

The sluice opens, and the mouse darts into the chamber, makes a turnabout in the water and swims toward the porthole. We are at a loss to understand what we see, and its unexpectedness: unaided by a mask, the mouse is swimming under water like a fish — breathing water, in fact!

Observations have shown that lungs can, in fact, absorb oxygen from water just as the fishes' gills do. Water normally contains about seven cubic centimetres of oxygen per litre, which is enough for fish. To be breathed by animals, water must contain at least 10 times as much oxygen as it normally does.

Water can be made to dissolve almost as much oxygen as normal air contains, that is, 21 per cent at a pressure of, say, 20 atmospheres. In the case of the experiment described above, a pressure of only from six to eight atmospheres was needed. The carbon dioxide exhaled by the mouse was dissolved in the water.

However it is essential that sea-water be used, or at any rate salt water, as it was found that animals breathing fresh water began to bleed from the throat, and subsequently died.

It was only after 36 minutes in the water that the mouse began to experience distress in breathing. This was because of the extra energy required to breathe water, which is 800 times as dense as air. But it was not dangerous for the mouse.

Does this show that there is no unbridgeable chasm between the functioning of fishes' gills and mammals' lungs, including those of human beings? We recall that our ancestors emerged from the sea aeons ago, and that even now we retain bodily vestiges of this ancestry: our blood plasma, for instance, contains the same salt composition as that of sea-water.

Will men ever be able to breathe water freely?

It seems they will eventually, although human beings have not so far taken part in water-breathing experiments. It may happen that for a man working on the ocean bed oxygen will be supercharged into water around him through a hose, thus enabling him to breathe. This would be a wasteful method, as only a small part of the oxygen would be used, the rest escaping into the surrounding deeps. But it is not inconceivable that a man working on the seabed, for instance, servicing oil wells, could be supplied with a light inflatable cupola to prevent the oxygen from escaping from his immediate vicinity. Such a device could be easily moved from place to place by two or three aquanauts.

Another use for "water-breathing" would be in saving the lives of prematurely-born infants. What is envisaged here is a kind of font providing conditions for the transition from the life of a foetus in the womb to the air-breathing life of a newly-born baby.

Algae for Oxygen

Oxygen for breathing might also be obtained from water algae known as chlorella. This simple plant growing in ponds and lakes (often covering them, in fact) has the reputation of being a nutrient factory, producing proteins, fats and vitamins. For aquanauts its value lies in its peculiar capacity to produce huge amounts of oxygen.

On one occasion, a mouse survived for 66 days in a hermetically sealed chamber in which chlorella had been placed — without the algae to replenish the oxygen in the air, the mouse

would have died after a few hours. And it could have remained in the chamber even longer, had it not drunk up all the water left for it, so bringing the experiment to a premature end. Despite the presence of the mouse, the amount of oxygen in the chamber rose from 21 per cent to 63 per cent.

Recently a similar experiment involving a human being was conducted, when Galina M., an associate of a Siberian institute, remained in an isolated chamber for an entire month, oxygen being supplied by chlorella.

In this experiment the algae grew in a greenhouse covering an area of about. 86 square feet, and resembling a completely closed lantern with a powerful xenon lamp burning inside. The inner surfaces of the walls had a mirror finish, allowing the escape of hardly any light, necessary for the chlorella's development as it grew in a bed of shallow dishes. It was found that a little more than 1 lb of chlorella produced sufficient oxygen for one human being.

The algae did its job well, absorbing exhaled carbon dioxide, and in the process of photosynthesis, extracting the oxygen, which it released into the environment. There were no other sources of oxygen, nor was any air-cleaning apparatus used. Galina was never distressed by oxygen deficiency: her excellent condition was continually checked by medical instruments.

A curious feature of this experiment was the algae's reaction to human behaviour — when Galina slept, it, too, slowed down its rhythms.

Perhaps the day is not far off when this "wonder plant" will obviate the need for crews of underwater houses to be supplied with bulky steel tanks of gas mixture, and expensive air purifiers.

It is also likely that aquanauts will be able to charge their aqualungs with oxygen supplied by chlorella. The Siberian experiment should find extensive application in outer space as well as the ocean depths.

The Clue of the Black Muscle

Many seamen know that instead of being red like those of other mammals, the muscles of toothed whales, such as the sperm whales, are black. This is caused by the respiratory pigment myoglobin. The whale stores oxygen not only in its lungs but also in its blood and in every muscle of its body. To be more precise, its lungs accumulate air, while the muscles accumulate pure oxygen. This is stored in the myoglobin molecules, which supply it to the whale's organs as needed. Carbon dioxide produced by "breathing" under water is stored in the blood, in such a manner that it does not reach the brain.

This is why sperm whales can remain submerged for more than an hour without breathing. They hunt squid many thousands of feet deep, for half an hour at a time.

Oxygen is also stored in the muscles of seals, walruses, sea turtles and waterfowl such as wild geese and ducks, all of which are compelled to have long pauses in breathing while searching under water for food. Their flesh, too, is dark, although not so dark as that of the sperm whales.

Even before the discovery that oxygen is stored in the muscles of whales, the capacity of an organism to store a gas was known, as man himself has this capacity, storing not oxygen but nitrogen.

This can be explained in the following way: the deeper a diver is submerged, the more his lungs are compressed, and the higher pressure facilitates the dissolving of gases in the blood. Each new intake of the breathing mixture (normally nitrogen and oxygen) enriches the blood with both gases, the difference being that as the oxygen is continually used up by the organism, the nitrogen accumulates in the blood. Then when the diver rises swiftly to pidly which happens, for instance, when the diver rises swiftly to the surface from a depth of more than 30 feet, the nitrogen in the blood turns back into a free gas, bubbles of nitrogen block the capillaries, and the diver is threatened with an attack of the "bends".

Soviet experts have been considering whether this danger can be avoided, perhaps using the whales' "experience".

Engineer V. Volkov believes that a diver at great depths should keep the water from pressing on his chest, in order not to increase the blood's capacity to dissolve nitrogen, and so avoid the "bends". In principle, this could be done by using devices resembling a rigid diving suit.

Another problem is how to achieve a degree of saturation of the organism with oxygen at which protracted functioning of the internal organs would be ensured. This demands the lowering of sensitivity to carbon dioxide of the brain centre controlling breathing, or the discovery of ways to increase carbon dioxide discharge from the body.

It is still a problem to avoid the "bends" when there is rapid submerging and surfacing, but some clues have been indicated.

Needed above all, experts believe, are substances that would help human tissues to store up somewhat larger amounts of atmospheric oxygen than is normal, and their discovery is felt to be a practical possibility.

Sergei Kleinenberg, Vsevolod Belkovich and Alexei Yablokov, three scientists who specialise in the study of whales, present the following picture: imagine yourself standing on the seashore about

A mouse swims under water like a fish. It is oxygen-enriched water, and the animal uses it for breathing.

10 or 15 years from now, and you see a man approach the water, with no aqualung and wearing only a mask. He swallows some pills and drinks something from a glass, and then he begins to do some deep breathing. After several minutes he dives, and remains underwater for five, 10 or even 15 minutes — even the best pearl divers of today cannot stay submerged longer than five minutes.

Just as you are thinking of calling for help for the drowning man, he emerges and lies down on the sand to have a rest.

Fantastic? It is now, but tomorrow it may become a reality. Taking a lead from the whales, which, observations show, have an additional source of energy in anaerobic oxidation (oxidation without oxygen), man can develop substances which will enable the organism to accumulate and even produce oxygen from his inner resources. Carbohydrates are at the centre of this hidden source of energy used by whales.

Where to Get Calories?

When a whale is submerged long enough the oxygen stored in the muscles, blood and lungs is eventually fully exhausted. At that point the whale's gastric juices begin to rapidly digest and dissolve the food in the stomach. The food solution is immediately absorbed by the intestinal walls, and the blood carries the nutrients all over the body. The more calories the food contains, the longer the whale can stay submerged without replenishing its stock of oxygen. Squid, incidentally, not only are the whales' favourite food but provide them with vast amounts of calories.

A sharply increased amount of lactic acid, formed as a result of anaerobic oxidation, has been found in the blood of whales killed just after they have surfaced after a prolonged dive. A surplus of lactic acid has also been found in the organisms of seals, alligators and wild ducks. Dr. Shollander, a British physiologist, has also detected a higher than normal lactic acid content in the blood of pearl divers, showing that oxidation without oxygen takes place in human beings, too. This can happen whenever the organism is under great physical stress, as in the case of weight-lifting and sprinting.

V. Golovanov, an engineer, and A. Yablokov, a biologist, have commented that possibly human and animal breathing will be found to have even greater similarity than has been established to date, and this will help in the search for nutrients to make it possible to exploit the additional energy resources of breathing without oxygen.

Checking this assumption, the experts have conducted a series of experiments with skin-divers of the Moscow "Dolphin" Club, and the Moscow Oil Engineers' College. It was found that grape juice with glucose had an effect on the divers similar to that of a squid diet on whales. Many of the divers were able to take longer dives than before, and swam underwater for longer periods.

Another suggestion — by a group of scientists working under the guidance of Dr. Nikolai Sirotinin, a member of the Ukrainian Academy of Sciences — is that deleteriously affected internal organs should be treated with an "oxygen cocktail" — an oxygenated nutritive liquid, which may work in rather the same way as those miraculous pills of the future.

The Kiev experts say their

oxygen cocktail has a tonic effect on the entire organism. Possessing practically no contra-indications, it helps sportsmen whose organisms suffer from oxygen shortage, say, in mountaineering.

It is possible to oxygenate many fruit juices, milk and other beverages. An oxygen cocktail made of egg white has also proved its worth. Dissolved in water and oxygenated, the white becomes a foam consisting of countless stable oxygen-filled bubbles. Just under half a pound of this beverage may contain more than 200 gallons of the "life gas". Stored in the stomach, the oxygen gradually passes into the bloodstream.

Soviet scientists have found that a man has a markedly slower heartbeat when he is diving. This effect, called bradycardia, is shared by diving animals.

So it seems that the time is coming when a human being will feel absolutely "at home" in the water. World Aquanaut Number One, Jacques Yves Cousteau of France, seriously forecasts the time when human beings will become amphibians, capable of living both on land and in the ocean depths. His name for this new breed of men is Homo Aquaticus. Perhaps the experiments of Soviet scientists will speed the process.

THE FIRST RUSSIAN ORDER

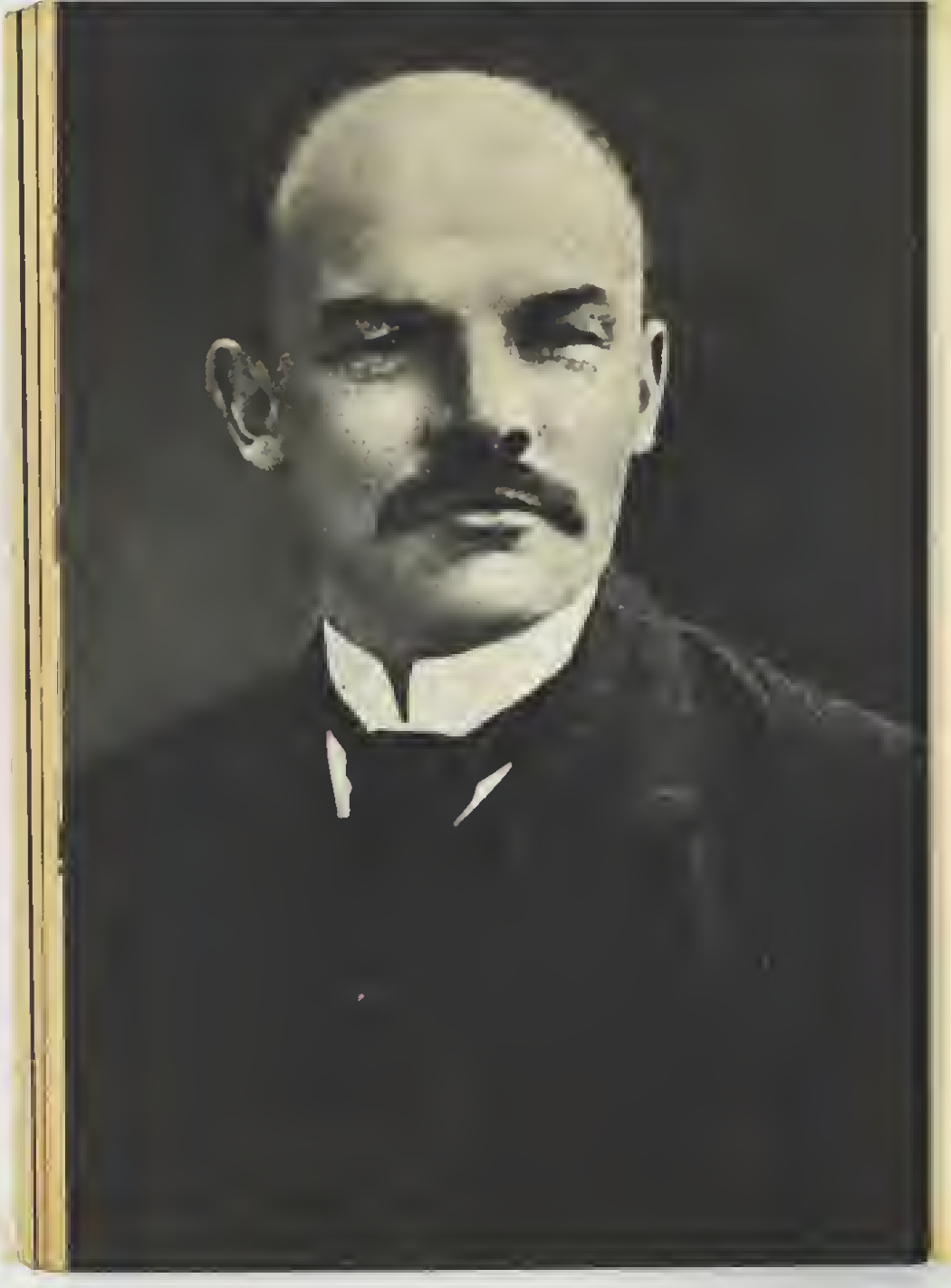
was instituted 270 years ago by Peter the Great (1672—1725). Before Peter's reforms in all spheres of state life orders did not exist as a mark of distinction in Russia.

On his return home from a tour of Western Europe, Czar Peter instituted the order of St. Andrew, "so that others, gazing upon this obvious mark of favour and preference might be encouraged to performs brave and faithful service and similar feats in time of peace and war".

The first Knight of the Order was Admiral and Field-Marshal Feodor Golovin (1650—1706). He was decorated on March 10, 1699, for outstanding services in the creation of a regular army and navy, and also for active diplomatic work.

In 1703 Feodor Golovin, the first holder of the order of St. Andrew, conferred the same decoration upon the Czar for his heroic feat in the capture of two Swedish ships in the mouth of the Neva.

From the magazine **Sudostroyeniye**



Many readers write to the Editor and ask what Marxism is all about.
SPUTNIK offers its readers Lenin's article ***THE THREE SOURCES AND THREE COMPONENT PARTS OF MARXISM*** *explaining the historical roots, meaning and significance of Marxism.*

The Three Sources and Three Component Parts of Marxism

Throughout the civilised world the teachings of Marx evoke the utmost hostility and hatred of all bourgeois science (both official and liberal), which regards Marxism as a kind of "pernicious sect". And no other attitude is to be expected, for there can be no "impartial" social science in a society based on class struggle. In one way or another, *all* official and liberal science *defends* wage-slavery, whereas Marxism has declared relentless war on that slavery. To expect science to be impartial in a wage-slave society is as foolishly naive as to expect impartiality from manufacturers on the question of whether workers' wages ought not to be increased by decreasing the profits of capital.

But this is not all. The history of philosophy and the history of social science show with perfect clarity that there is nothing resembling "sectarianism" in Marxism, in the sense of its being

a hidebound, petrified doctrine, a doctrine which arose *away from* the high road of the development of world civilisation. On the contrary, the genius of Marx consists precisely in his having furnished answers to questions already raised by the foremost minds of mankind. His doctrine emerged as the direct and immediate *continuation* of the teachings of the greatest representatives of philosophy, political economy and socialism.

The Marxist doctrine is omnipotent because it is true. It is comprehensive and harmonious, and provides men with an integral world outlook irreconcilable with any form of superstition, reaction, or defence of bourgeois oppression. It is the legitimate successor to the best that man produced in the nineteenth century, as represented by German philosophy, English political economy and French socialism.

It is these three sources of Marxism, which are also its component parts, that we shall outline in brief.

I

The philosophy of Marxism is *materialism*. Throughout the modern history of Europe, and especially at the end of the eighteenth century in France, where a resolute struggle was conducted against every kind of medieval rubbish, against serfdom in institutions and ideas, materialism has proved to be the only philosophy that is consistent, true to all the teachings of natural science and hostile to superstition, cant and so forth. The enemies of democracy have, therefore, always exerted all their efforts to "refute", undermine and defame materialism, and have advocated various forms of philosophical idealism, which always, in one way or another, amount to the defence or support of religion.

Marx and Engels defended philosophical materialism in the most determined manner and repeatedly explained how profoundly erroneous is every deviation from this basis. Their views are most clearly and fully expounded in the works of Engels, *Ludwig Feuerbach* and *Anti-Dühring*, which, like the *Communist Manifesto*, are handbooks for every class-conscious worker.

But Marx did not stop at eighteenth-century materialism: he developed philosophy to a higher level. He enriched it with the achievements of German classical philosophy, especially of Hegel's system, which in its turn had led to the materialism of Feuerbach. The main achievement was *dialectics*, i.e., the doctrine of development in its fullest, deepest and most comprehensive form, the doctrine of the relativity of the human knowledge that provides us with a reflection of eternally developing matter. The latest discoveries of natural science — radium, electrons, the transmutation of elements — have been a remarkable confirmation of Marx's dialectical materialism despite the teachings of the bourgeois philosophers with their "new" reversions to old and decadent idealism.

Marx deepened and developed philosophical materialism to the full, and extended the cognition of nature to include the cognition of *human society*. His *historical materialism* was a great achievement in scientific thinking. The chaos and arbitrariness that had previously reigned in views on history and politics were replaced by a strikingly integral and harmonious scientific theory, which shows how, in consequence of the growth of productive forces, out of one system of social life another and higher system develops — how capitalism, for instance, grows out of feudalism.

Just as man's knowledge reflects nature (i.e., developing matter), which exists independently of him, so man's *social knowledge* (i.e., his various views and doctrines — philosophical, religious, political and so forth) reflects the *economic system* of society. Political institutions are a superstructure on the economic foundation. We see, for example, that the various political forms of the modern European states serve to strengthen the domination of the bourgeoisie over the proletariat.

Marx's philosophy is a consummate philosophical materialism which has provided mankind, and especially the working class, with powerful instruments of knowledge.

II

Having recognised that the economic system is the foundation on which the political superstructure is erected, Marx devoted his greatest attention to the study of this economic system. Marx's principal work, *Capital*, is devoted to a study of the economic system of modern, i.e., capitalist, society.

Classical political economy, before Marx, evolved in England, the most developed of the capitalist countries. Adam Smith and David Ricardo, by their investigations of the economic system, laid the foundations of the *labour theory of value*. Marx continued their work; he provided a proof of the theory and developed it consistently. He showed that the value of every commodity is determined by the quantity of socially necessary labour time spent on its production.

Where the bourgeois economists saw a relation between things (the exchange of one commodity for another) Marx revealed a *relation between people*. The exchange of commodities expresses the connection between individual producers through the market. *Money* signifies that the connection is becoming closer and closer, inseparably uniting the entire economic life of the individual producers into one whole. *Capital* signifies a further development of this connection: man's labour-power becomes a commodity. The wage-worker sells his labour-power to

the owner of land, factories and instruments of labour. The worker spends one part of the day covering the cost of maintaining himself and his family (wages), while the other part of the day he works without remuneration, creating for the capitalist *surplus-value*, the source of profit, the source of the wealth of the capitalist class.

The doctrine of surplus-value is the corner-stone of Marx's economic theory.

Capital, created by the labour of the worker, crushes the worker, ruinin small proprietors and creating an army of unemployed. In industry, the victory of large-scale production is immediately apparent, but the same phenomenon is also to be observed in agriculture, where the superiority of large-scale capitalist agriculture is enhanced, the use of machinery increases and the peasant economy, trapped by money-capital, declines and falls into ruin under the burden of its backward technique. The decline of small-scale production assumes different forms in agriculture, but the decline itself is an indisputable fact.

By destroying small-scale production, capital leads to an increase in productivity of labour and to the creation of a monopoly position for the associations of big capitalists. Production itself becomes more and more social — hundreds of thousands and millions of workers become bound together in a regular economic organism — but the product of this collective labour is appropriated by a handful of capitalists. Anarchy of production, crises, the furious chase after markets and the insecurity of existence of the mass of the population are intensified.

By increasing the dependence of the workers on capital, the capitalist system creates the great power of united labour.

Marx traced the development of capitalism from embryonic commodity economy, from simple exchange, to its highest forms, to large-scale production.

And the experience of all capitalist countries, old and new, year by year demonstrates clearly the truth of this Marxian doctrine to increasing numbers of workers.

Capitalism has triumphed all over the world, but this triumph is only the prelude to the trinmph of labour over capital.

III

When feudalism was overthrown, and "*free*" capitalist society appeared in the world, it at once became apparent that this freedom meant a new system of oppression and exploitation of the working people. Various socialist doctrines immediately emerged as a reflection of and protest against this oppression. Early socialism, however, was *utopian* socialism. It criticised capitalist society, it condemned and damned it, it dreamed of its destruction, it had visions of a better order and endeavoured to convince the rich of the immorality of exploitation.

But utopian socialism could not indicate tbe real solution. It could not explain the real nature of wage-slavery under capitalism, it could not reveal the laws of capitalist development, or show what *social force* is capable of becoming the creator of a new society.

Meanwhile, the stormy revolutions which everywhere in Europe, and especially in France, accompanied the fall of feudalism, of serfdom, more and more clearly revealed the *struggle of classes* as the basis and the driving force of all development.

Not a single victory of political freedom over the feudal class was won except against desperate resistance. Not a single capitalist country evolved on a more or less free and democratic basis except by a life-and-death struggle between the various classes of capitalist society.

The genius of Marx lies in his having been the first to deduce from this the lesson world history teaches and to apply that lesson consistently. The deduction he made is the doctrine of the *class struggle*.

People always have been the foolish victims of deception and self-deception in politics, and they always will be until they have learnt to seek out the *interests* of some class or other behind all moral, religious, political and social phrases, declarations and promises. Champions of reforms and rotten it may appear to be, fooled by the defenders of the old order until they realise that every old institution, however barbarous and rotten it may appear to be, is kept going by the forces of certain ruling classes. And there is *only one* way of smashing the resistance of those classes, and that is to find, in the very society which surrounds us, the forces which can — and, owing to their social position, *must* — constitute the power capable of sweeping away the old and creating the new, and to enlighten and organise those forces for the struggle.

Marx's pbilosophical materialism alone has shown the proletariat the way out of the spiritual slavery in which all oppressed classes have hitherto languished. Marx's economic theory alone has explained the true position of the proletariat in the general system of capitalism.

Independent organisations of the proletariat are multiplying all over the world, from America to Japan and from Sweden to South Africa. The proletariat is becoming enlightened and educated by waging its class struggle; it is ridding itself of the prejudices of bourgeois society; it is rallying its ranks ever more closely and is learning to gauge the measure of its successes; it is steeling its forces and is growing irresistibly.

Prosveshcheniye No. 3, March 1913
Signed: V.I.

Siberia Looks Forward to the 21st Century

by Yuri FEDOSYUK

People tend to be rather vague about the extent of Siberia. They know it is somewhere in the east of the Soviet Union but some imagine that it includes all Soviet Asia, right up to the Pacific, while others would agree in general but throw out Kazakhstan and the four Soviet Central Asian republics.

They are both wrong. Siberia today is officially designated as that part of Soviet Asian territory bordering on Kazakhstan in the south, the Urals in the West, and the dividing ranges of the Pacific coast in the east. All the territory beyond these ranges, including the Chukotka and Kamchatka regions in the north-east, and the Khabarovsk and Maritime territories together with Vladivostok and the Amur region, falls under the heading of the Soviet Far East. This region, like Siberia, is part of the Russian Federation, the largest of the Soviet Union's 15 sovereign republics.

Even excluding the Far East, Siberia has an immense area — 3,861,000 sq. miles, or almost half of the entire territory of the Soviet Union (8,633,205 sq. miles). This makes it larger than Australia and twice as big as Western Europe. When it is midnight in the extreme east of Siberia, it is only five in the afternoon at its westernmost point. In some parts of Siberia it is necessary to consult a watch to know whether it is day or night, morning or afternoon: more than a quarter of its territory lies within the Arctic Circle, where day and night are each six months long, and where the Aurora Borealis is sometimes to be seen in the long Arctic night.

That Siberian Frost

"As cold as Siberia" — people say this is many languages to indicate the superlative degree of cold. And Siberia certainly is a superlatively cold land. This is partly because it is wide open to the winds blowing from the Arctic Ocean while the warmer breath of the other two oceans does not reach it, the Atlantic being too far distant, while the Pacific is shut off by a barrier of mountain ranges. As everyone knows, in Siberia the winter is long and hard, and the northern "pole of cold" is to be found on its eastern territory — at the town of Oimyakon, in Yakutia, where the temperature falls to 96 degrees below zero Fahrenheit. They don't think of pouring out milk for customers in Siberian markets in wintertime — it is sold frozen in bars!

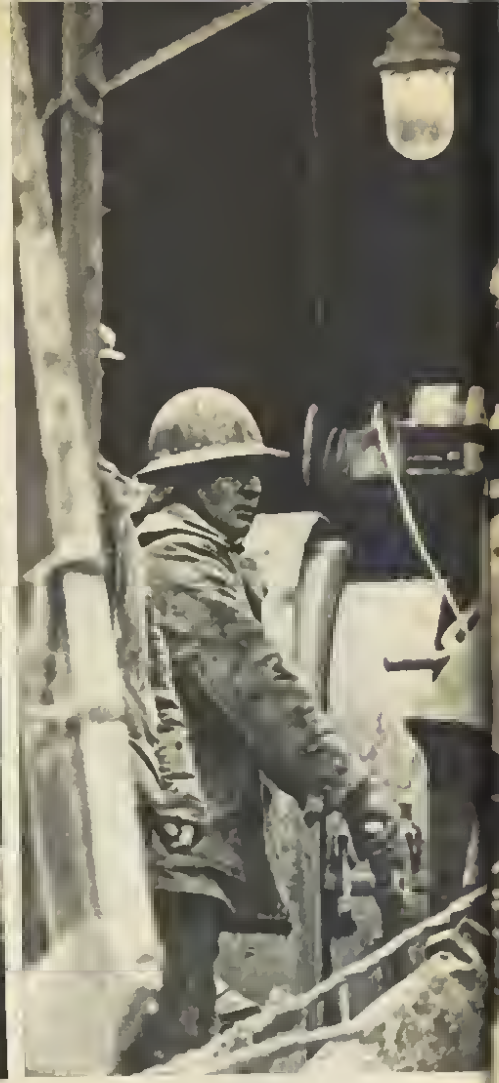
One might well ask: how do people live in such a climate? Apart from the fact that they become accustomed to its rigours, and of course, are well-clothed against it in warm furs, the extreme dryness of the atmosphere and the absence of wind make it more bearable. The winter is sunny, so that even when the thermometer registers 25 degrees below zero, icicles can be found hanging from the roofs. Frostbite is not common. Even when the temperature falls to minus 50 degrees pupils pour out of doors during the school breaks to play games, and no teacher, however strict, would think of keeping them indoors. Everyone, Siberian and visitor alike, agrees that the frost puts life into people.

And here is an interesting fact, which may be explained by the climate: men of Yakut nationality never go bald! They only turn grey. Unfortunately for others, neither a prolonged stay in Yakutia or even being born there can save them from baldness if they are prone to it.

Permafrost

The worst consequence of the Siberian frosts is the creation of a permanently-frozen subsoil layer, known as the permafrost, which affects almost half of Siberia, notably in the east. In the north the soil thaws out in summer, and in Yakutia it does so to a depth of six and a half feet, but below that the soil remains frozen, as deep as 2,300 feet.

But Siberians turn this disadvantage to good account by building underground refrigerators for food storage. In any case,



"Russia's might will grow thanks to Siberia."
Mikhail Lomonosov, the great Russian scholar and scientist, made this prophecy about two centuries ago. But genius that he was, Lomonosov could hardly have imagined the fantastic wealth discovered to date in Siberia, of which oil is virtually the most important. The deposits discovered in Samotlor (Tyumen) alone will produce up to 100 million tons of oil a year.

it is only a partial handicap for farming, as the soil does thaw in the summer, although the ripening period is longer than elsewhere.

It is in housing and road construction that the permafrost provides the worst obstacles to progress. When the soil thaws, structures sometimes subside, crack and even collapse.

These problems are studied by a special institute, so that now in many Siberian cities within the permafrost zone the water supply and sewerage systems function

without interruption. More and more highrise brick blocks of flats are going up in the permafrost belt, undistinguishable from their counterparts elsewhere except for the fact that they are built on reinforced concrete piles driven into the eternally frozen subsoil.

Siberian Summer

According to an old joke, which Siberians think is not so funny, winter lasts twelve months a year in Siberia. But even near the pole of cold at Oimyakon people gather luxuriant bunches of flowers and get a good suntan in July.

Naturally, the farther south one goes, the longer and hotter are the summers and the richer the vegetation. In summer, the beaches have their quota of bronzed bathers, and in southern Siberia the summer is much as it is for instance, in the Ukraine, with the average July temperature reaching +71-75 degrees Fahrenheit, and up to 104 degrees in places.

The inhabitants have learnt to cope with the climate, as far as agriculture is concerned, growing cucumbers, tomatoes and even watermelons and grapes in the open. At one time "Siberian apple" meant "potato", but now a real Siberian apple has been developed, which is frost-resistant and weighs one and a half pounds.

It is common to see Siberian cities and towns surrounded by orchards and berry patches, and in the city of Omsk, for instance, it is traditional that every resident should plant and cultivate at least one tree, so that as soon as spring appears each year, the citizens head for the parks and gardens, spades in hand.

Siberia, in fact, is one of Russia's important farming areas, with an annual output of tens of millions of tons of the best wheat, maize and industrial crops. This is because although the growing period is short, its brevity is made up for by the abundance of warmth and light. Novosibirsk has a surprisingly large number of sunny hours — 2,028 a year — and Barnaul has 1,900, while "warm European" Moscow registers only 1,585 sunny hours a year.

Amazing Variety

Before I had ever visited Siberia, I once asked one of its old inhabitants who had travelled extensively in that part of the country: "Tell me in a nutshell, exactly what is Siberia like?" He frowned, gave another puff of pungent tobacco smoke, and said at length: "Most varied".

Vague as it may be, this reply makes its point. And indeed, how can a territory stretching 4,350 miles from east to west and 2,175 miles from north to south be adequately described in a few words? The diversity of Siberia's climate, economy and everyday life is simply amazing.

Looking at the "top layer" of this huge land we find its winding coast and accompanying tundra stretching along the Arctic Ocean. The tundra is countryside covered with snow for the greater part of the year. It has no forests; its only vegetation is brown moss, off-white lichen and scattered, scrubby trees. It is the end of the world, and it looks like it, with its grey sky and vast expanses whose silence is only rarely and momentarily broken by some broad cheek-boned Nenets hunter racing along in a dog sled, or herders driving reindeer.

In spring the brooding silence is broken by sirens of ships using the Northern Sea Route, closed by ice in winter. Nevertheless, as remote as it is, this sparsely-populated area every year witnesses a growth in the number of townships, complete with hospitals, schools, clubs and other facilities, including electricity.

One of the reasons for this spreading of civilisation is the fact that nickel and copper are mined and processed in far northern regions, beyond the 70th parallel. Here you will find the Soviet Union's northernmost city, Norilsk, with its population of 129,000. Challenging the bleak tundra, it has all the conveniences of a modern city — broad avenues, orchards which are green in their season, its own television centre, and so on.

Not far away on the swiftly-running River Khantaika, the world's most northerly electric power generating station is being built.

To the south, the tundra eventually gives way to the taiga, the local name given to the boundless, primeval forests, consisting mainly of conifers, where the sunlight never penetrates the thick foliage of pines and firs often 100 feet high.

Timber is a key item of Siberian natural wealth, and the taiga is also a rich source of furs, coal and iron ore. Oil and gas, too, have recently been found in this region — an underground ocean of energy, which has brought a forest of derricks to vie with the mighty pines. In the taiga one sees the tents of geologists giving place to the timber barracks of construction workers, while these in their turn yield place to the well-built homes of miners, oilmen and gasworkers who arrive in Siberia from all over the Soviet Union.

Still in the taiga zone, one finds the old city of Tomsk, which boasts Siberia's oldest university, and the three-centuries-old city of Krasnoyarsk, with its cellulose and paper combine and its well-known engineering works.

Seventy years ago the famous Russian author and playwright Anton Chekhov visited the wild banks of the River Yenisei and wrote later: "I stood there thinking what a full, interesting life will brighten these banks some day."

Nowadays, close to where the

No other place can compete with Siberia for deposits of non-ferrous metals. Here molybdenum ore is being loaded onto 27-ton tip-up lorries.

writer stood, there rotate the turbines of the world's largest hydroelectric power station with a capacity of six million kilowatts of electricity, while not so far away again, on the River Angara, a tributary of the Yenisei, there is another powerful hydroelectric station at Bratsk, with a capacity of 4.5 million kilowatts. Here you will find the largest man-made reservoir on earth — its surface is eight times greater than that of Lake Geneva.

Near Irkutsk, where not long ago there was only the wild taiga, the town of Angarsk with its important oil refinery, has rapidly come into being, with bathrooms and all other modern facilities for every apartment. Irkutsk itself, with a population of 420,000, has a modern aluminium plant processing alumina straight from the ore, without intermediate operations. It also has other big industries.

Further south again, the taiga merges with forest-steppe and steppe country. This is the warmest and most highly-developed part of Siberia, where nature is a joy to the eye and the heart, with a landscape of shadowy groves mingling with black earth plains. Only recently, the bare steppe here has given way to fields of ripening wheat.

Overlooking the River Ob is one of the latest cities of the Soviet Union to have reached the one million population mark — Novosibirsk.

This city, now 76 years old, claims the status of metropolis of Siberia, although in fact Siberia has no single administrative centre. One ground for Novosibirsk's claim is the fact that it is Siberia's largest city both in terms of population and in industrial and scientific importance. It has developed into one of the world's leading science centres by virtue of the establishment here, 12 years ago, of the Siberian Branch of the USSR Academy of Sciences.

Novosibirsk is also the home of an excellent opera and ballet theatre, and of modern engineering works.

Finally, there are the moun-

Some people imagine Siberia to be a savage wilderness. This view of Omsk shows that they are behind the times.

tains of the south, placed as it were by nature as if to show off Siberia's diversity. The highlands are clad in virgin forests resembling the taiga, and the hollows are often like steppeland. Here the climate varies according to altitude rather than latitude. Crowning the southern mountains are the Altai Range, resembling the Swiss Alps with their jagged crests and peaks rising to 15,000 feet, covered in perpetual snow, and their slopes criss-crossed by glaciers, while in the foothills there are numerous waterfalls.

Here one finds some wonders of nature, such as Lake Teletskoye, the dream of every artist, yachtsman and angler. This 1,000-feet deep lake offers unparalleled views and, according to enthusiastic anglers, its fish simply beg to be caught.

Lake Teletskoye's beauty is outshone only by that of Lake Baikal, the deepest lake in the world, which is in eastern Siberia near Irkutsk. Siberians refer to it reverently as their "sacred and glorious sea".

As many as 336 rivers empty into Lake Baikal: only one, the Angara, flows out, wayward and turbulent but now harnessed by a mighty chain of power stations, the biggest of which is at Bratsk. Baikal's water is the purest in the world, and is so clear that from the surface one can clearly distinguish objects as much as 130 feet down.

High, steep mountains and

wooded valleys border the lake, which has quite unusual flora and fauna, half of the species being unique in the world. Baikal, for instance, is a place where the variety of seal known as nerpa is found, and it has a unique variety of fish, the omul, which those who have tasted declare to be among the most delicious in the world.

It is in the mountainous south that almost all of Siberia's mineral resources are concentrated — coal, iron, gold, non-ferrous and rare metals. The Kuznetsk coal basin, sometimes called the Siberian Ruhr, is in this region, and is remarkable for its ferrous and non-ferrous metal and coke-chemical and engineering industries in a setting of spreading farmlands and alpine meadows strewn in their season with iris and edelweiss.

In such a vast expanse as Siberia there are, of course, places where the only forms of transport are the dog-sledge, the tractor, and the helicopter ...

In summer, this area is reminiscent of the Ukraine — blue sky, heat, wheat, maize, and huge watermelons. In southern Siberia you somethimes even catch the hot breath of Central Asia, and camels stalking through the sand-hills are not an uncommon sight in some parts.

Roads and Rivers

In physical relief, Siberia somewhat resembles West Europe, apart from Scandinavia. It gradually slopes down northward so that all the large rivers flow north, emptying into the Arctic Ocean. These include the Ob, the Yenisei and the Lena, which for length and size of basins are among the world's ten largest rivers. Siberian rivers are more than six miles wide in places, even far from their mouths, and they are rich in fish. But it is their inexhaustible supplies of water which give them their great importance, for

. . . but modern towns are springing up in the wilderness, too, such as Norilsk, the most northerly town in the world.

A food store in Norilsk. Further evidence that "savage, slumbering Siberia" is an outmoded conception.

it is on this basis that the world's largest hydroelectric power stations are being built in this region.

Timber-rafting, as in days of yore, is common on these rivers, which are also transport arteries for other products, not only in the summer navigation season, but in winter, too, when they become "ice highways". In large tracts of Siberia, especially in the north, railways and highways are few, largely because of the difficulties presented by building on frozen ground. As in the past, the key transport artery is still the Trans-Siberian railway running from Moscow to Vladivostok, the greater part of which has been electrified. Until not long ago the Siberian stretch of this line could have been likened to the bare bough of a tree, but new branches, sprays and twigs are spreading out from it to new industrial centres, so that the original outlines of the "bare bough" may soon be lost.

Air transport has become more important with the spread of population, so that it is not an exaggeration to say that some Yakuts and Evenks, sons and daughters of nomads who roamed this area not so long ago, now use air travel even more frequently than many West Europeans.

Every large Siberian centre is

within a few hours' flight of Moscow and the health resorts of the Caucasus and the Crimea, which are popular with Siberians. Siberia is also crossed by an airline connecting Japan with Europe. A network of branch airlines connects many Siberian centres, including remote townships, the inhabitants of which are thus placed within easy reach of the bigger centres.

Urgent medical aid is dispatched to distant villages by plane or helicopter, and planes are also used to fight forest fires.

Siberia's Big Attraction

Siberia is in the throes of economic development, and although tourist centres and resorts are being set up, it is still far from being a tourist Eldorado, because such facilities as roads, petrol stations, hotels and the service industries leave much to be desired. Even in summertime, the taiga is hard going for the traveller, as both human beings and animals are the victims of swarms of midges and mosquitoes, and a safe mass killer of midges has still to be found.

But while tourism is not likely to be developed as a big industry for some time, Siberia attracts many visitors, and not only visitors, but people who come to stay and work there, despite the difficulties.

Tens of thousands of workers on contract or temporarily go there for periods, or even settle permanently with their families. Young people, especially, are attracted by Siberia with its wild, fascinating natural beauty and its boundless scope as an outlet for human energy: almost every year this land yields up more of its secrets, as for instance, Yakutia's diamonds, Tyumen's oil, and the rich coal deposits stretching along the Trans-Siberian railway.

As for variety of minerals, it is said that the whole periodic system of elements can be found there, while Siberia's fauna chart would be the delight of any zoologist or hunter — it includes seals, bears, snow leopards, lynx, mountain goats and sheep, beavers, sables, ermines, mink and hundreds of bird and fish varieties. As Russians used to say even long ago: Siberia is a goldmine. Long ago Russians used to say that Siberia had a terrible reputation, yet people lived better there than most people living in the old Russia. The ill-repute borne by Siberia in the past was due not so much to the rigours of the climate, but to its places of penal servitude and exile.

But it was also a place to which, ever since the end of the sixteenth century European Russians had fled from serfdom, which incidentally was never known in Siberia, from the ruling church, from landlessness, droughts and lack of fodder, from landlords, officials and police. The ordeal of resettlement was too much for some, but many who went to the new settlements which were being established soon set up new homes and began new lives. There was plenty of space in the forest, ample land to cultivate, and all too few people to do it. Settlers grew rich, established large families and in their laconic prayers sought blessings on Mother Siberia.

Siberia is a land of majestic rivers, with a highly developed river fleet and top-notch ports.

The rigorous life and constant struggle with nature produced a particular type of Siberian Russian — strong, tough and courageous (Siberians were notorious for going bear-hunting alone!)

Electrification

"Communism is Soviet power plus electrification of the whole country." These words of Lenin's became a programme for Soviet Russia, where half a century ago the total capacity of the country's power stations amounted to one million kilowatts. The electrification of the European part of the USSR began back in the twenties, but Siberia had to wait until the fifties. Now hydroelectric stations are being built in Siberia at a rate and on a scale that is unique. Two massive stations are already in operation — the Irkutskaya (600,000 kw) and the Bratskaya (3,600,000 kw at present, to be brought up to 4,500,000 kw). The Krasnoyarskaya (5 million kw), the Sayanskaya (5-6 million kw) and the Ust-Ilimskaya (4-5 million kw) stations are under construction. Plans are under way for a chain of hydroelectric stations on the Yenisei — these will be up to 10 million kw capacity apiece. The information given here relates solely to east Siberia — and there is plenty going on in west Siberia, too.

and at the same time a great-hearted people with a pronounced streak of hospitality in their natures.

The Old Nomads

The only inhabitants of Siberia before the Russians arrived were nomad tribes spread sparsely across the land. When they became subjects of the Czarist Rus-

Hunting

The dense virgin forests, endless northern tundra and magnificent rivers of Siberia add up to a paradise for hunters and anglers. Apart from "cosmopolitan" varieties of freshwater fish to be found in many other countries, the angler can catch omul and taimen here, which are unique to this part of the world (top left). And they taste good too! The hunter has a vast choice, ranging from the bear to the saiga antelope (top right). On his treks into forest or taiga he may be accompanied by a Siberian laika — the alert-looking dog shown below the fish.

sian Empire they felt its oppression in the form of a forced payment of yasak, a tribute in furs, as well as the extortion of local czarist officials. At the same time, contacts with Russian working people, which were extensive, brought great benefit to the nomads, who thereby learned to till

Continued on p. 176

Natural Features

A land of mountains and plains, impenetrable forest and steppe stretching as far as the eye can see, Siberia is simply magnificent. The winter there, renowned for its 58 degrees of frost (Fahrenheit) and deep snow, is splendid, with a clear sky overhead and dry, invigorating air. The Siberian spring, about which little is heard as a rule, comes with a rush and riot of colour. The summer is practically rain-free, the sun warms the air to 104 degrees F., and Siberians disport themselves on the beaches of rivers and lakes. Siberia's autumn is a bush fire — with the forests flaming red and gold.

And perhaps the most splendid of all Siberia's natural charms is Lake Baikal, the deepest lake in the world (top right), whose limpid waters will capture the heart of anyone who travels this way.

The Strange World of Čiurlionis

Through the medium of the stars, Infinity and Eternity speak to our souls.
Camille Flammarion

Mikolas Čiurlionis, the famous Lithuanian artist and composer, was born in 1875 in the south of the country. Shortly after, his father received an appointment as organist in the resort town of Druskininkai. There the boy passed his childhood and there he later created many of his musical and artistic works.

He demonstrated his musical abilities early in life. At the age of 13 he was accepted into the orchestra and orchestral school of Prince Michail Oginski. While at the school he began to draw and compose music. In 1894 he entered the Warsaw Conservatoire, from which he graduated in 1899.

But he began to be increasingly interested in painting, and in 1904 entered the Warsaw School of Fine Arts. Over the next six years he was extremely active as a painter, producing more than 300 works, which subsequently brought him a world reputation. In the main he painted cycles of works — for example his "Sun Sonata", "Sea Sonata", "Signs of the Zodiac" and "Zhemaitis Cemetery". The wealth of constantly changing rhythms which seem to set the tempo of his paintings, the repetition, over and over again, of one and the same artistic image in a painting or even a cycle of paintings, his colour solutions and his extraordinarily harmonious combinations enable one to speak of the musical origins of Čiurlionis's paintings, the rare melodiousness of his work. In addition, it has a strongly romantic folklore basis, the artist making great use of the rich traditions and legends of his native land.

In the autumn of 1907 he settled in Vilnius, the present capital of the Lithuanian Soviet Socialist Republic, in pursuit of his aim to "dedicate all my past and future work to Lithuania". He conducted a choir, gave concerts and wrote music, but his chief occupation at the time was organising the Second Lithuanian Art Exhibition. At the exhibition, which opened in February 1908, he showed 56 canvases, 12 of which made up the cycle "Signs of the Zodiac".

Three years later Čiurlionis, by now an artist of repute, died. Large posthumous exhibitions of his work were organised in Vilnius, Moscow and St. Petersburg which added further lustre to his reputation.

"The River".

"Sonata of the Pyramids". "Tale of a Castle".

The Well-known Lithuanian Poet, Eduardas Miežalaitis Writes in the Magazine «Znamya»(Banner) about Čiurlionis's Work

To understand Čiurlionis, we must cast aside pre-conceived notions. Čiurlionis was a philosopher. He expounded his original concept of the Universe in sound, contour, line, colour, poetic image. It is hard to determine where music ends and painting begins, where painting ends and poetry begins. What is it? Music? Plastic form? Poetry? I would not take it upon myself to answer. Čiurlionis is still being explored and absorbed. Probably, he is everything put together — sound and colour and poetry. But above all, he is a thinker.

He ponders over the nature of existence. In the complex nature of his thinking, it is hard to discern in what Universe we find ourselves with the artist. It is difficult to settle on the time. Is it the future, the present, the past? Or the initial beginnings of creation, within the mystery of the

"Tale of Kings".

formation of the stars and the planets and solar systems?

Impossible to tell. There is eternal cold. And on some planet or star the artist heard and saw that which he tries to convey in image form. Strange visions. Unimaginable worlds. On earth such scenes could not have existed. But what if they did? How can one know? If they did they have been lying like foundered ships on the ocean floor or under golden sands for aeons.

But perhaps it is only an intuitive guess on the part of the artist? His thought travels with the speed of light and therefore it does not matter to him what forms his subject matter. Perhaps our planet. Perhaps another galaxy. It is difficult for us, but not for him. He is Columbus. He was the first to step ashore on the

"The Path of the Queen".

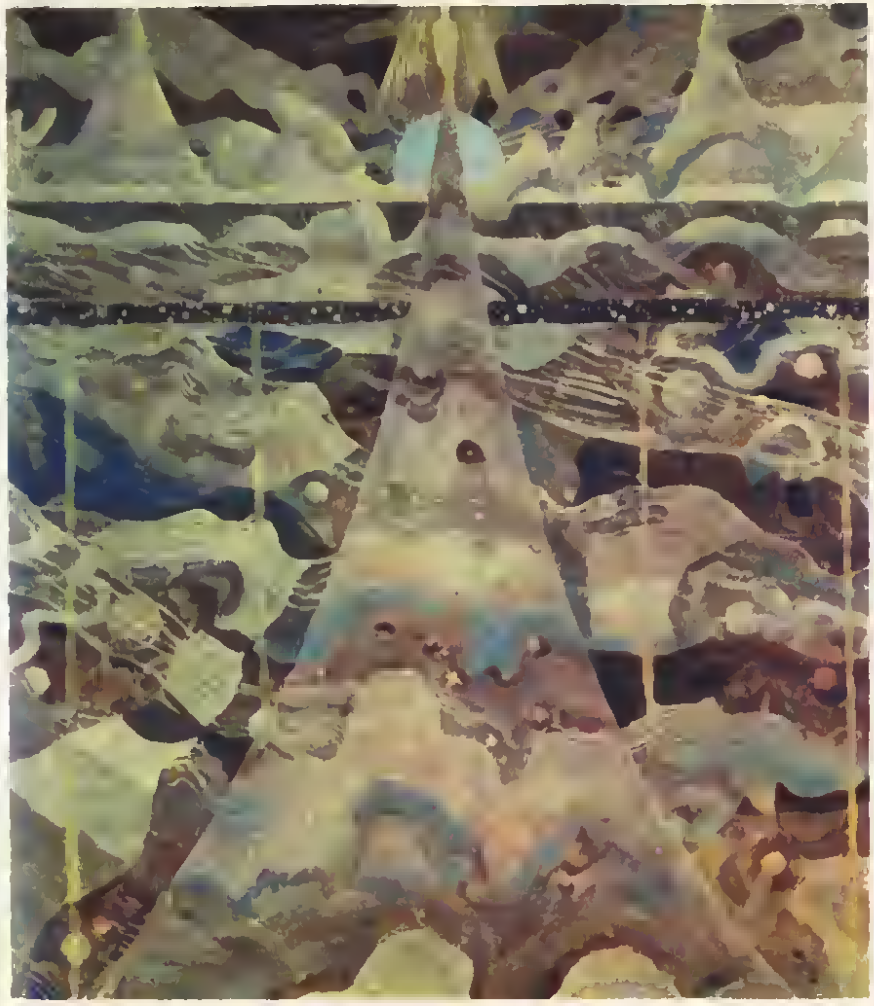
"The Funeral".

continent of a new era. He lived somewhere that we shall not reach for a long time. He had another concept of space and time, differing from ours. Perhaps such concepts will belong to men of the future . . .

Dreams?

According to Čiurlionis, good and evil are equally relative. The inhabitants of earth have an unwavering and, in general, correct belief that they live on the best planet, one of unsurpassed perfection. Perhaps that is so. But Čiurlionis was an inhabitant of the Universe and therefore, in all likelihood, he was more objec-

"Sonata of the Stars".



tive. Why the Earth? Perhaps more ideal planets exist? Who knows?

Fantasy, one can imagine, is also tangible. Nothing is born of nothing. This is an eternal truth. And the images of fantasy must have heen brought to life by the material. We believe that our planet is a consummate ideal for others. It is known that Dante and Goethe thought otherwise. They showed us the models of strange worlds no one knows from whence arisen. We think more soberly and realistically than these eccentrics. Who knows, perhaps they came to our conceited, round, and in general comfortable, self-satisfied planet, which basks in the light of the sun's smile, from other worlds? They appeared and proceeded to undermine our roots, destroy the smugness, arouse restlessness and searchings in the heart.

"The Archer"

Čiurlionis must also be an arrival from the planet Dreams. Otherwise, how could he create architectural ensembles of such fantastic beauty in airless space, in a vacuum? And for what reason? Wasn't his own planet enough for him? And how did he construct those ensembles of beauty? How are they anchored under the heavens, sending us the light of the stars? What forces support them? There are such forces. They are suffering and joy, happiness and pain, music and muteness . . . Oh, these are powerful forces!

For his construction he utilised a fabric unseen by the eye but very strong — love. Love of man. And it is not matter at all. It is rather anti-matter. But if it is anti-matter, then out of it the only thing you can construct is an anti-world. That is probably the way it was. Čiurlionis created an anti-world and pitted it against the real world. Not because he didn't like the real world. Rather because of his profound love for the world. He created an antithesis to the world and asked the world what it wanted to be like. Did it like the harmony of the anti-world? And the world answered it did. Then let the anti-world be transformed into the world. How? They must fuse together. It can be tried but it is not easy. Creation is never simple.

Soviet Ferrous Metal Industry:

Its Past, Present and Future

by Ivan KAZANETS,

Minister for
the Soviet Ferrous Metal Industry

Specially for SPUTNIK

Iron has been called the basis of civilisation. Nevertheless, before 1917, Russia, the largest country in the world, produced less than one-seventh of the US output and far less than Germany, Britain or France.

Once embarked on the socialist path of development, it took the USSR a mere 25 years to become the world's second largest (next to the USA) producer of metals.

The gap between the USSR and the USA is being gradually reduced and the iron and steel industry in the USSR registers faster growth rates than in the United States.

The Stone Age of Russian Iron

"As for iron, one of the chief products of modern industry, one of the foundations, it could be said, of civilisation," wrote Lenin, "Russia's backwardness and primitiveness are particularly appalling."

That was in 1913, on the eve of the First World War. Russia then turned out 4.2 million tons of cast iron and 4.3 million tons of steel — less that six per cent

of the world output (80 million tons and 76 million tons respectively). For a huge country with a population of 160 million and colossal economic (notably transport) requirements, that was obviously short commons.

Why did Russia lag behind in those days? Perhaps she lacked raw materials? Certainly not. Russia had all the mineral resources needed for developing metallurgical industries and she had them in great quantities. Suffice it to say that in output of iron ore, coke and agglomerate the Soviet Union is now leading the world.

Then perhaps Russia had no people capable of raising her metallurgical industry to an adequate level? Not at all. Back in the latter half of the nineteenth century Russia had bred her own school of metallurgists which earned world recognition. At the 1900 World Exhibition in Paris the noted French metallurgist Montgolfier stated: "Our plants and the entire steel industry owe their present level of development and their advances to the work and investigations of the Russian engineer Chernov." The French expert was referring to Dr. Dmitri Chernov (1839-1921) who was elected an honorary member of the Institute of Mining Engineers of the United States and honorary vice-president of the Institution of Metallurgists of Britain.

In short, Russia had all the material and intellectual resources required for developing her metallurgical industry, but she left them unused. The czarist capitalist-landlord regime proved incapable of awakening this enormous potential. It lay dormant. As a result, the Russian ferrous metallurgical industry fell further behind other countries as regards both volume of production and technical level.

The First World War produced added evidence of the economic and political bankruptcy of Russia's old regime. In 1915 the metallurgical industries began to close down, though they played a key role in wartime. The government failed to develop them in areas unaffected by the ravages of war, yet in boundless Russia that could have been done. As a consequence , towards the end of the war Russia's output of cast iron dropped to one-seventh its prewar level, to 0.6 million tons, and steel output slumped still more, to 0.4 million tons.

Beginnings of Soviet Metallurgy

In June 1918, after the Great October Socialist Revolution and the advent of the Bolsheviks to power, the Council of People's Commissars (the Soviet Government) endorsed a decree nationalising key industries, thus setting the stage for reorganisation of industries on socialist lines. But then came civil war, aggravated by military intervention.

Russia's main metallurgical areas were occupied. The workers

fought at the fronts, which surrounded the Republic of Soviets like a ring of fire. In 1920 only 22 small open-hearth furnaces of the country's 260 remained operational. The metallurgical industry in the south was hardest hit — only one blast furnace out of a total of 50 remained in Bolshevik hands. No wonder the country's iron output that year fell to its lowest level in the twentieth century: a mere 116,000 tons of cast iron and 194,000 tons of steel were produced.

In such a situation the plan* drafted at the initiative of Lenin appeared unrealistic indeed: it envisaged the raising of the output of cast iron to 8.2 million tons and steel to 6.5 million tons within 10-15 years. Some economists claimed that to even reach the prewar level would require at least 20 years, if not 25. That is what probably would have happened if Russia had remained a bourgeois-landlord country. Debts to foreign financiers and capitalist governments would have made Russia a dependent country. (Over two-thirds of the capital invested in the iron industry of czarist Russia belonged to foreigners).

* The State plan for Russia's electrification (GOELRO) which also contained a programme for the development of metallurgy and other branches of the national economy.

** Old Russian measure: 36.11 pounds.

The Republic of Soviets, which was taking its first steps in an atmosphere of political boycott and economic blockade, could expect no assistance from the outside. As Lenin repeatedly emphasised, socialist industrialisation could only be carried out by building up internal accumulations and exercising rigid economy.

"We Are Progressing. We Are on the Right Path."

Early in 1921, a commission set up to inspect metallurgical plants drafted a programme for their reconstruction. In mid-year a Chief Metallurgical Industry Board was set up to supervise these plants. The energetic measures of the Communist Party and the Soviet government had an immediate effect: the metallurgical industry began a steady climb.

It was during that year that Lenin, Chairman of the Soviet of People's Commissars, received the managing director of the Yugostal (Southern Steel) Trust, Ivan Mezhlauk.

"How much money do you need to raise the southern metallurgical industries to their prewar level?" Lenin asked.

"A lot of money," said Mezhlauk. "But if we were offered, say, ten million gold roubles we could undertake to turn out six million poods** of cast iron in 1922."

"All right, agreed," said Lenin.

The Azovstal plant today. Built under the first Soviet five-year plan (in the thirties), it was wantonly ruined by the nazi occupying forces during their retreat in 1943. Reconstructed in the first post-war five-year plan, the plant is now one of the iron and steel giants in the south of the country.

"Let's sign the terms. Give me the bill . . ."

On November 7, 1921, the fourth anniversary of the October Revolution, Mezhlauk, on notepaper of the former Russian-Belgian Metallurgical Society, signed this obligation: "From January 1, 1922 to January 1, 1923 . . . I undertake, upon receipt of the working capital to be placed for this purpose at the disposal of Yugostal by the Presidium of the Supreme Council of the National Economy on October 27, 1921, to deliver to Comrade Vladimir Ilyich Ulyanov (Lenin), through the office of the Presidium, six million poods of cast iron and four million poods of rolled metal, or, altogether, 10 million poods of ferrous metal."

The obligation was met within the stipulated time.

Reporting to the All-Russia Congress of Soviets on the eve of 1922, Lenin said: "We are producing possibly something like six per cent of the prewar figure. That is the extent of the ruin and poverty to which the imperialist and civil wars have reduced Russia. But we are, of course, making headway. We are building centres like Yugostal, where Comrade Mezhlauk is working with the utmost devotion . . . In the first half of 1921, 70,000 poods of iron were smelted monthly, in October, 130,000, in November, 270,000, or almost four times as much . . . We by no means close our eyes to the fact that the figures I have given represent a miserable, paltry level, but all the same they prove that no matter how exceptionally grave things were in 1921, no matter what extraordinary burdens have fallen to the lot of the working class and peasants, we are, nonetheless, progressing, we are on the right path . . ."

Less than eight years passed before iron output was brought back to its prewar level: for cast iron it was achieved in 1929, for steel even earlier, in 1928. In another eight years this level was surpassed several times over: in 1937 the Soviet Union smelted 14.5 million tons of cast iron and 17.7 million tons of steel.

Exploring Subterranean Treasures

Postwar reconstruction was paralleled by country-wide planned prospecting for minerals. One of the priorities of this scheme was to discover material resources for the country's metallurgical industry.

Incidentally, back in 1915 a group of men from Russia's Academy of Sciences offered to organise an extensive search for natural resources, especially minerals, without which the country would be unable to heal the wounds of war, let alone achieve that prosperity and cultural level which befit both its natural riches and the inexhaustible resources latent in its people.

The scientists succeeded in getting a special commission set up

for the study of Russia's production potential, but "before the October Revolution the work of the Commission could not be developed," said Dr. Alexander Fersman, a geochemist member of the Commission. "The initiative of the scientists ran up against innumerable obstacles. Even for the working of tungsten deposits — an important problem — the Academy, after two years' effort, failed to obtain the negligible sum of money it asked for."

And tungsten is needed for the manufacture of special steels. Even the iron deposits in the Kursk Magnetic Anomaly, which had been known of for a long time, lay unexplored.

"I am writing this to draw attention to the exceptional importance of investigating the Kursk Magnetic Anomaly," Lenin wrote in 1922, when Russia was still in the throes of the Civil War. "It has almost been proved that we have an untold wealth of pure iron there."

In 1923 the first pounds of iron were extracted from a trial shaft sunk in a section of the Kursk Magnetic Anomaly. In our days that basin has been found to be one of the world's richest.

After the 1917 socialist revolution other vast ore deposits were discovered in the Soviet Union, mostly in the Urals region, Kazakhstan, Siberia and the Far East. In 1968 Soviet ore output came to about 180 million tons as against 9.2 million tons in 1913. This is more than in any other country.

As for coke, a vital ingredient of the smelting process, the Soviet Union has also advanced to the leading place in the world.

The Training of Specialists

Naturally, however huge the material resources of the iron and steel industry, it could not advance technologically or increase its output without a continual influx of experts. The Soviet state got down to tackling this problem from the very first.

In 1918 Moscow set up a Mining Academy, one department of which later broke away to form the Institute of Steel and Alloys. Today a list of the USSR's specialised secondary schools and higher educational institutions training Soviet metallurgists would fill many pages.

New research institutes sprang up, too. In 1924 Moscow established a Bureau for Metallurgical and Heat Engineering Construction, which later developed into an institute called Stalproekt. In 1926 an institute for designing new metallurgical plants opened in Leningrad. Now the largest of its kind, it was the cradle of the Soviet school of metallurgical designers.

In the new conditions, when the government was making every effort to stimulate the development of the cast iron and steel industries, the Russian school of metallurgy, which had

More and more mechanisms and automatic machines, and fewer and fewer people to service them — here are interior panoramas of shops at the Magnitogorsk Iron and Steel Works (left) and the Azovstal Plant (right), typical of the USSR's iron and steel enterprises as a whole.

come into being before the revolution, entered an epoch of "renaissance."

Among the scientists who made major contributions to the development of Soviet metallurgy were Alexander Baikov (1870—1946), Vladimir Grum-Grzhimailo (1864—1928), Nikolai Kurnakov (1860—1941) and Nikolai Gudtsov (1885—1957). Apart from being outstanding researchers, many of them also had considerable teaching and organisational abilities, which were brought into play especially after the Revolution in 1917. These people trained a worthy generation of successors. From the ranks of the gifted youngsters for whom Soviet power opened up vast avenues in science, came major, Soviet-trained specialists who won great international prestige for Soviet metallurgy.

An outstanding role in the advancement of the Soviet metallurgical industry was played by Dr. Ivan Bardin (1883—1960), a Member of the Academy of Sciences and winner of the Lenin and State prizes. His name has been given to the Central Ferrous Metallurgy Research Institute he organised.

Under the guidance of Dr. Bardin, the Kuznetsk metallurgical plant was built in the 1930s. Using the iron ore of the Urals and the coking coal of Western Siberia, it has become the country's second coal-and-metallurgical centre (the first was in the south of the European part of the country, which used coal from the Donets basin and ore from Krivoi Rog).

In the Years of Trial

In June 1941 the Soviet Union was attacked by nazi Germany. Before the war 68 per cent of the country's cast iron and 58 per cent of its steel were produced on territory seized by the enemy in the first few months of the war. Some 62 per cent of the USSR's blast furnaces and 53 per cent of its open-hearth furnaces were destroyed. But the defence industries continued to receive as much metal at they needed (and of the required quality) from the metallurgical centres in the Urals, Siberia, Kazakhstan and Central Asia. "It appears a miracle to us," the nazi newspaper Das Schwarze Corps admitted in 1943, "that from the boundless Soviet steppes more people and machines emerge as though some giant wizard were moulding them of Urals clay in countless numbers."

During the war the output of cast iron and steel in the Urals and the Asian part of the country rose by 58 per cent and 56 per cent respectively.

Reconstruction of the Soviet ferrous metal industry had ended by 1949. It took less time than after the First World War, though the scale of destruction this time was far greater. By 1950 the Soviet Union had emerged in first place in Europe and second in

the world for output of cast iron and steel.

The map of this industry has changed beyond recognition. Before the revolution Russia's iron industry was concentrated in three areas — the southern and central European part and the Urals. Now it is advancing in Siberia, the Far East, Kazakhstan, Azerbaijan, Georgia, and other regions.

This expansion was coupled with further technological progress.

Technical Progress

There are now thirty-three 70,500-cubic-feet (and more) blast furnaces in the world; 16 of them are Soviet and two American. Among these giant blast furnaces in the USSR there are three with a 95,300-cubic-feet capacity. Each is to produce from one and a half to two million tons of cast iron annually (more than a third of Russia's entire 1913 output).

But setting records is not an end in itself. An expansion of capacity from 70,500 to 95,300 cubic feet means an annual slash of operational costs. Cost per ton of output is reduced, too, though investment on some items of equipment goes up: the furnaces are being equipped with computers and other complicated machinery for control.

Our country has the biggest open-hearth furnaces in the world, with a capacity of 600-900 tons, which means an annual production. But the open-hearth process is increasingly giving way to the use of convertors, the steel being smelted in tip-up pear-shaped convertors instead of in stationary furnaces.

Convertor production is nothing new — it has been known since last century. This century it began to decline, but was revived by the use of oxygen, which intensified the metallurgical processes. Today the oxygen-convertor method is generally in no way inferior to the open-hearth process in quality of steel and is superior to it in productivity.

The proportion of steel smelted in convertors is growing steadily. In 1970 it will be almost four times as much as in 1965, while the increase by 1975 will be six-fold.

Oxygen-enriched air blast is used in both the open-hearth and the blast furnace processes. In 1969 oxygen was used in smelting 46 per cent of all the cast iron and 60 per cent of the open-hearth steel produced in the Soviet Union.

In the USSR an installation has been developed, and is now in use, for continuous steel pouring. This enables many manual operations to be cut out; working conditions can be improved and labour productivity increased, and it is no longer necessary to build blooming and slabbing mills, huge, expensive installations on which the ingots are handled

Now the molten metal is on its way to be shaped into ingots.

when the ordinary process is used. At the Brussels World Fair in 1958 a model of the Soviet continuous steel-pouring installation, the biggest in the world, won a Grand Prix. Licences to build installations according to Soviet designs have in recent time been acquired by France, Italy, Japan and India.

Prospects for the Immediate Future

In 1913 Russia was listed among the world's five leading metal producers, but was last of the "big five", after the United States, Germany, Britain and France. By 1967, the 50th anniversary of the October revolution, the state of affairs had changed.

Output of ferrous metals in 1967 (in millions of tons)

	cast iron	steel
USA	81.2	115.4
USSR	74.8	102.2
Japan	41.0	62.2
FRG	27.5	36.7
Britain	15.4	24.3
France	16.0	19.7
the whole world	352.0	489.0

When the Soviet Union endorsed its seven-year plan for 1959-1965 the **New York Times** wrote that Americans felt that the Russians were merely two jumps behind them and were breathing down their necks. In the 10 years that have passed the Soviet ferrous metal industry has made a powerful thrust forward. Another 10 years will likely see our country surge ahead still further.

Whereas in 1960 the USSR produced 46.8 million tons of cast iron and 65.3 million tons of steel, in 1969 the corresponding figures were 81 million and 110 million. In 1975 the industry's commercial output will be roughly 30 per cent above the 1969 figure. No other state in the world has ever known such stable rates of development.

There are plans for raising the industry's efficiency and technical level over the next few years. In the period 1971-75 this will be done by rapid development and introduction of new technological methods, by the further intensification of production, the increasing of capacities, by reconstruction of obsolete plant and equipment or its removal from exploitation altogether.

The fact that the demands of the economy for iron and steel are being satisfied to an increasing degree means that there will be advances in other spheres. It will facilitate the development of industry as a whole, agriculture, construction and transport, and this will ultimately lead to substantial rises in the Soviet people's standard of living.

There are thousands of firework displays of this kind every minute in factories up and down the country — never-ending salutes in honour of the achievements of the Soviet iron and steel industry.

OLYMPIC AND WORLD CHAMPION

by Victor **VICTOROV**
from the magazine OGONYOK

When the modern Olympic Games were first held in Athens in 1896 the winner of the hop, step and jump (sometimes called the triple jump) was an American. In succeeeding Olympics the event was won by athletes from Ireland, Great Britain, Sweden, Finland,

Australia, Japan, Brazil and Poland. In 1968 at Mexico City a Soviet sportsman, Victor Saneyev, took the gold medal. The dramatic story of how he developed from gangling schoolboy to Olympic and world champion is told below.

Typical Caucasian hospitality greeted Victor Saneyev when he returned from the ancient land of Mexico to the ancient land of Abkhazia (an autonomous republic forming part of the Georgian Soviet Socialist Republic).

Only a few days before, his compatriots and workmates at the state farm had sat glued to their TV screens, watching Victor make his record-breaking triple jump of 17 metres 39 cm. Now he was back in their midst and the banquet table groaned under the weight of skewers of shashlik, huge bowls of subtropical fruit, platters of flat bread and pitchers of wine. Toasts were offered and glasses clinked. Victor drank too — but not wine. His goblet contained only tangerine juice, as befits an athlete determined to keep in shape.

After the feasting and drinking his jubilant companions crowned Victor with a victor's wreath: not the traditional laurel wreath, though Abkhazia boasts plenty of bay-trees, but a wreath woven of tangerine branches bearing ripe fruit. And this, too, was befitting, for Victor Saneyev is an agronomist specializing in citrus fruits.

In the Beginning

There was a tall, gangling boy who used to trot to school in Sukhumi, Abkhazia's capital nestling between rugged mountains and the Black Sea.

Victor's school marks were only average, but he showed a special liking for PT. His athletic potentialities were quickly spotted by the gym instructor, Akop Karselyan, a former track and field sportsman. He detected a future athlete in young Victor.

So he tried out the lad in various jumping events — the high jump, long jump and finally the hop, step and jump. The latter appealed to the boy and the coach encouraged him: "That's your trump card," he said.

Life was no bed of roses for the Saneyev family. Victor's father was taken ill and became a bed-ridden invalid. His mother had to shoulder the responsibility of caring for several children. In these circumstances it was decided to send Victor to a boarding school, where he would be looked after at the state's expense.

After finishing school Victor enrolled at the Institute of Subtropical Crops. Throughout his college years he continued training under the direction of his first coach, Karselyan, who devoted a great deal of his spare time to nursing along the promising young triple jumper. Victor began to compte in city and republic track and field meets, with considerable success.

Then came the great day when he was selected to become a member of the USSR national track and field team. It was a tribute to Karselyan's coaching and to Victor's own persistence and abilities.

National Line-up

The coach of the national squad, Vitold Kreyer, had been a noted hop, step and jump athlete in his younger days. He looked his new charge over carefully: height, 188 cm; weight 78 kg. Strong back muscles — of importance in the triple jump. Good legs — plenty of speed for the take-off sprint. Fine competitive spirit.

But Kreyer spotted one serious weakness in Victor. The young man was hotheaded and impatient. Over the years Karselyan had pointed this out to Victor repeatedly, but the temperamental youngster had failed to change and entered every contest in a highly emotional state, nerves keyed up to breaking point.

What the coach feared happened. At the 1965 national tournament Victor "opened the throttle wide" in his run up, forgot to "brake" before taking off, and severely injured one leg. Doctors gave a categorical verdict: no jumping for a whole year.

A whole year! Victor was in despair at first. Then he accepted the decision, settled down and began to train in the gym, working with barbells and performing increasingly difficult physical exercises. Slowly the injured leg improved. Even more important, Victor now seriously studied the technique of triple jumping. He came to understand the seeming paradox of his coach's advice: "Your run up should be fast, but your jump — slow!" It was precisely during this "idle" year that Saneyev moulded himself into a real jumper.

He made his first triple jump after the injury in the spring of 1967: 16 metres 32 cm. Not bad.

Once again he competed in track and field meets, but though his own score improved steadily, he inevitably lost to the top jumpers of the time — Alexander Zolotaryov, Nikolai Dudkin and Vladimir Kravchenko. Learning how to lose gracefully, after having done your best, is also a lesson every athlete must master. Victor learned how to lose.

Mexico City, 1968

It was the day of qualifying heats. Victor succeeded in his first attempt, easily and coolly. But he received a psychological jar when the news spread among

the athletes that in another sector Giuseppe Gentile of Italy had jumped 17 metres 10 cm, eclipsing the world record of the Polish athlete Joseph Schmidt (17.03) which had stood for eight years.

Before the official competitions started, Victor and his two coaches, Vitold Kreyer and Akop Karselyan, had worked out a system of silent signals: when

The jump that brought Victor Saneyev two lots of laurels at once — the world record and the Olympic title. Below: the scoreboard announces the results of the winners in Mexico — Saneyev, Prudencio and Gentile.

Kreyer showed one finger it meant Victor's run was too slow; two fingers meant he was mincing; three fingers, crouching down too soon; four, too far from take-off plank; a fist — everything O.K.

Then came the crucial jumps.

The stands were packed. The man to watch was Gentile. What would he do today after his record leap yesterday? The list of competitors had been whittled down 35 to 13 — the world's best triple jumpers.

Victor's two coaches were sitting side by side. They, too, were keeping an eye on Gentile.

And well they might! For the Italian athlete again forced the stands to gasp — his first jump set a new world record: 17 metres 22 cm.

In the jumps that followed, no one even came close to Gentile's mark, including Victor. And Kreyer lifted one finger: he had to improve his run on the second attempt.

He ran, gathering speed. Hop, step and jump: 16.84. Not good enough. And now the Brazilian athlete Prudencio leaped 17.05.

Victor Saneyev could only do one thing: keep cool and try to do better.

His third try. He streaked down the cinder track, took off . . . and heard the roar of the crowd as he landed in the pit. 17 metres 23 cm.

Enough to win? Perhaps. For in their next tries Gentile and Prudencio both overstepped the take-off plank . . .

But after the fifth attempt he had to start all over again from scratch: Prudencio had jumped 17.27.

Victor looked up at the stands, where his coaches should have been seated. They were no longer there. Then he spotted them down near the track, and heard Kreyer shout: "Give it all you've got, and don't bother to overstep the plank!"

The last attempt. His final chance. Victor began his run and suddenly felt the ground running up to meet him — a sure sign of a good jump.

Kreyer and Karselyan shuddered in horror as they saw Victor taking off a full 20 cm before reaching the plank. Such a splendid jump ruined! And Victor himself, as he hit the sand in the pit, said to himself, "I've lost." Then a mighty roar from the stands engulfed him, and he knew he had won.

When he hopped out of the sandpit the electric signboard read: 17.39. His coaches rushed up, pounded him on the back; you couldn't tell whether they were laughing or crying.

But Victor, strangely calm and collected, only thought soberly: "I would have jumped 17.50 if I had gone right up to the plank . . ."

Bettering Economic Relations

by Nikolai PATOLICHEV,
Minister of Foreign Trade of the Soviet Union

For the Benefit of Nations

The practical proposals and ideas advanced by the countries which have taken the initiative in convening an all-European conference now offer a basis for the discussion of urgent problems, and above all, the problem of creating the conditions for peace and security in Europe. It is clear to all that the success of such a conference and the laying of a firm foundation for security in Europe would make it possible to work out measures that would normalize the political situation, lessen world tensions, eventually eliminate the arms race and military confrontation, reduce the burden of military expenditures, and gradually release enormous material and human resources now diverted from peaceful, constructive labour.

Without doubt, the achievement of an agreement on issues of collective security in Europe would also favour extensive, mutually-advantageous economic cooperation between countries with differing social systems, a fuller utilization of the benefits offered by the international division of labour, specialization and cooperation in production, and exchange of information on science, technology and culture.

This would lead to further expansion of trade. Foreign trade, more than any other form of international relations, depends

on stability in international politics. It needs a secure and stable peace and a policy of peaceful coexistence.

The expansion of trade, and economic, scientific and technical relations between Eastern and Western Europe would work toward greater mutual understanding, improving peaceful, friendly relations between these states, and serve to reduce international tension. Not accidentally, the question of trade and economic exchange which appears on the agenda for such a conference, as proposed by the foreign ministers of the Warsaw Treaty countries, is tied up with the question of European security.

There is immense scope for broader European cooperation. Expanded economic relations would make it possible to develop and launch, by the joint efforts of different countries, all-European power, transport, air, water and health projects that would have an immediate bearing upon the well-being of the entire population of Europe. Such schemes include the laying of transcontinental oil and gas pipelines, a single system of inland waterways to link European rivers, important new power transmission lines which lead to the creation of a single European power grid.

Many problems arise out of today's scientific and technical revolution. Some of them could be settled better if states with different social and economic systems coordinated and united their efforts. The establishment of good-neighbour relations between the countries of Western and Eastern Europe would allow for a vast expansion in the sphere of scientific and technical cooperation. That, in turn, would speed up technological progress and bring appreciable benefits to all states.

The advantages of international cooperation in science and technology are now clear to all those West European countries that are anxious over increasing industrial and technological lag, as compared with the United States. Along with that, there is a growing understanding of the fact that the problems stemming from intensified technological progress in Europe can be better solved through the more effective use of the experience accumulated by all countries, including the Soviet Union and other socialist states.

One of the most important and most promising forms of economic cooperation between the European countries is industrial cooperation, including extensive specialization of production, exchange of patents and licenses, and the considerable expansion, on this basis, of trade in machinery, chemical and other manufactured goods.

Hopeful Examples

The socialist countries have had considerable experience in

scientific, technological and industrial teamwork, including the coordination of scientific research, and specialization and cooperation in production. This experience boosts the effectiveness of production and the productivity of labour. The decisions of the 23rd special session of the Council for Mutual Economic Assistance are aimed at furthering this sort of mutually beneficial cooperation.

The socialist countries are ready for extensive scientific, technological and industrial contacts with the capitalist countries. States that maintain normal relations can cooperate in different areas of the economy, conclude major, mutually advantageous transactions, and carry out joint schemes in various fields.

Examples are many. In recent years the Soviet Union has concluded agreements on economic, scientific and technical cooperation with France, Italy and Finland. Needless to say, these agreements are in the interests of a stable peace in Europe and extensive, mutually beneficial cooperation.

Franco-Soviet relations are successfully developing. The Soviet Union and France are doing joint research in nuclear physics at the Serpukhov atomic accelerator; they have a common system of colour television, SECAM, now being introduced in several other countries; in addition to this, they are working together on the desalination of sea water, and the transmission of high-tension electric power. A permanent Franco-Soviet commission is looking for new possibilities for the expansion of international specialization within certain industries and for the mutually beneficial exchange of goods.

Many commercial contacts have been established with Italian companies. Fiat is cooperating with Soviet car-builders, Olivetti with Soviet computer-makers and Montecatini-Edison with the Soviet chemical industry.

The Soviet Union is expanding economic and technical cooperation with Finland. With Soviet assistance, the Finnish firm of Rautaruukki has built a steel mill. Soviet organizations have helped in the reconstruction of the Saima Canal. Under a new agreement, the Soviet Union is to share in the building of a Finnish atomic power station. After the Second World War Finland built four hydropower stations in the Murmansk Region, USSR. A permanent inter-governmental Soviet—Finnish commission for economic cooperation is studying other possibilities for economic and technical cooperation.

Good prospects are opening up for scientific and technical cooperation with Britain and Austria, with which the Soviet Union has signed agreements. Other socialist states are also expanding scientific and technical cooperation with capitalist countries.

Without question, the relaxation of tensions and the establishment of relations of trust between European countries would expand the sphere of scientific, technical and economic cooperation between countries with differing social systems, which, in turn, would act as an important aid to the expansion of trade. A positive role in broadening economic, scientific and technical cooperation between European countries could also be played by the European Economic Commission.

The Soviet Union is one of the world's leading trading powers, with commercial contacts in more than one hundred countries. Eighty of these countries have trade and payment agreements with the Soviet Union. As has been reported in the press, the Soviet Union's foreign trade turnover in 1968 topped 18 thousand million roubles. In the first nine months of 1969 it grew rapidly rising 10.8 % as compared with the same period in the previous year.

Climate of Trust

The failure of the cold war policy and a certain reduction of world tension in the late 1950's made possible a substantial increase in commercial contacts between the capitalist and socialist countries. In terms of money, trade between the Soviet Union and advanced capitalist countries rose from 1,223 million roubles in 1958 to 3,852 million roubles in 1968, trade with Western Europe accounting for 1,121 million roubles in 1958 and 3,066 million roubles in 1968. The result was a considerable increase in the flow of goods between the Soviet Union and Western Europe. In exchange for the goods it exports, the Soviet Union imports plant and equipment needed for its industrial advance, as well as consumer goods and the raw materials for their manufacture, to meet popular demand for such goods more fully. Expanding trade is good for our trade partners, too, so that its benefits are felt by both sides.

In recent years, the Soviet Union has been effectively developing trade contacts with Finland, France, Italy, Britain, Sweden, Austria, and other countries in Western Europe. In 1968 Soviet foreign trade figures topped those of the previous year: in trade with Britain, by 125 million roubles, with France, by 89 million roubles, with Federal Germany, by almost 75 million roubles, with Italy, by 48 million roubles, with Sweden, by 41.5 million roubles and with Belgium, by nearly 35 million roubles. The rate of increase continued to rise in 1969. An important contributing factor in the expansion of trade relations has been long-term trade agreements, while another was the adoption by a number of West European countries of the generally accepted practice of crediting the export of industrial equipment, as applied to the Soviet Union.

At the same time, the adherence of certain West European powers to the aggressive policy of NATO prevents the utilization of existing possibilities for promoting mutually advantageous economic relations with the socialist countries. It is known that the socialist countries produce some 40 % of the world's industrial output, the Soviet Union accounting for approximately half of this. If some Western states were to revise their trade policy toward the Soviet Union and other socialist countries, and consider the increased economic potential of these countries, trade could grow more rapidly. Besides, the economic relations remain exposed to the detrimental effect of persisting NATO restrictions on the export of certain goods to socialist countries, introduced by the Atlantic Pact strategists at the height of the cold war. Apparently, attempts to preserve such anachronistic discriminatory restrictions do not contribute to confidence in the stability of trade relations so necessary between partners, and prevent the fruitful development of trade and other economic relations, as well as the establishment of a climate of trust and mutual understanding.

The setting up of a European collective security system would help create favourable commercial and political conditions and serve as a basis for the expansion of trade between East and West. An objectively pressing problem now is presented by having to organize all-European economic cooperation, which presupposes removal of all forms of descrimination that exist anywhere in Europe.

The progress of all forms of economic relations between European countries constitutes a vital factor bringing the peoples of Europe closer together and establishing an atmosphere of trust and mutual understanding. Such relations, combined with the all-round development of scientific, technical and cultural cooperation, may become a key factor in European security and the consolidation of peace in Europe.

Europe can and must become a region of fruitful friendly cooperation, a region of peace and mutual understanding.

Each year the magazine SOVIETSKY EKRAN, with a two million circulation, conducts a poll of readers to discover the best foreign and Soviet films of the year, the best Soviet and foreign actors and actresses. In 1967 the palm for actresses went to Sophia Loren and Tatyana Doronina. In 1968 Anouk Aimée replaced Loren, but Doronina remained. In the USSR a film is considered a hit if it is seen by not less than 17.5 million people in a year. Films Doronina appeared in have gathered audiences of the following order: ELDER SISTER, 22.5 million a year. THREE POPLARS IN PLYUSHCHIKHA STREET, 18 million in four months. ONCE AGAIN ABOUT LOVE, 19.4 million in two months. It is plain that Tatyana Doronina is No. 1 star on the Soviet screen. Here we reprint abridged versions of two articles about her from the Soviet press.

TATYANA DORONINA – Soviet Star No. 1

Is Faithfulness Out of Date?

by Grigori TSITRINYAK
from the magazine
SOVIETSKY EKRAN

Tatyana Doronina has played characters embodying three types of loyalty: the loyalty of a sister in *Elder Sister*, the loyalty of a wife in *Three Poplars in Plyushchikha Street* and the loyalty of a girl in love in *Once Again About Love*.

The theme of *Three Poplars in Plyushchikha Street* is so simple that it is almost trite: A young country woman, who has not been tremendously pampered by life or by her husband, comes to the town and there meets a man who is kind and tender. Nyura — this is the character played by Doronina — is attracted to this man who is such a contrast to her rough, indifferent husband. The man makes a date with Nyura and the viewer realises that if she turns up, then something quite new will begin, something for which Nyura has been waiting a long time and which she richly deserves. But Nyura does not keep her date, she renounces herself for the sake of her family.

Many viewers were disappointed by this, even indignant. They expected and wanted a different ending, they wanted happiness for Nyura, played with such insight by Doronina. But what did the actress herself think?

"When I thought about Nyura I tried to remember everything I knew about women like this. And I know quite enough, because in Nyura there is something of my mother, her sister, and many other women I have known since childhood, when I was evacuated during the Second World War to a village in the Yaroslavl region. And since I knew them, I could say quite definitely that they would never have gone out to keep that date. Some might say that it was because of sheer narrow-mindedness, while others, including myself — would call it genuine virtue. This is the whole wonder of it... and the whole tragedy. In this lies the breadth of the character of this Russian woman — with her extreme openness and goodness and her quite unusual self-abnegation, she always puts her home, her children and her husband first — whatever he may be, he is her husband. If the script had in fact provided for a single meeting, I know how I would have played it: all Nyura's openness would have flown out of the window, because she would ever after have been tortured by the thought of her own treachery. My view is that a meeting with the driver would have been wrong.

"Today a great deal is said about young people, about their free and easy attitude to sex, and about the destruction of ideals. I am convinced that the ideals of real goodness and loyalty which seemed to many viewers of *Three Poplars* to be old-fashioned are in fact making an impact. I have a suitcase full of letters from film fans. These letters are confessions of faith, stories about people's lives, thoughts upon life in general. This all confirms my belief that a film must be something the viewer experiences, that it is extremely important for the viewer to have an opportunity to share the experiences and emotions of the characters on the screen. If a film is successful from this point of view I consider it most rewarding.

"On the other hand, the character I play in *Once Again About Love*, Natasha, an air hostess, is reproached, as one critic elegantly put it, 'for her wilful impropriety in a certain direction'.

"A great deal in this film stems from the title, and for me this angle is precisely the main thing about the film — that marvellous, wonderful state when a person rises above herself, when the prime consideration ceases to be: 'What will happen to me?', but: 'What will happen to him?'

"To begin with, Natasha seems to be an extremely ordinary person, but she has a spiritual generosity, loyalty, an ability to forget herself, not to worry about 'what's in it for me'. And I like her not only for her capacity for love, but because she is able to live life to the hilt, without calculating profit and loss. This is not a mere theoretical point — she confirms her philosophy by her deeds. Even her death in a burning plane, as she tries to save the passengers, is an affirmation of the same attitude."

"Art Does Not Demand Sacrifices"

(Interview with Tatyana Doronina)

by Edward TSERKOVER
from the weekly NEDELYA

"Where were you born, Tatyana, and what kind of childhood did you have?"

"I was born in Leningrad, and my people were workers. I went to School No. 261 in Leningrad. I thought I was good at my school work, but my teachers thought otherwise, and my parents were inclined to side with the teachers. My thirst for learning was really my downfall. I went to extra French, calisthenics, elocution, biology, singing and sharpshooting — all on top of the school curriculum."

"I suppose you were dreaming of the theatre even then?"

"No, I wasn't. The theatre all seemed too far above me. I used to think everything I saw on the stage was splendid, and quite out of my reach."

"So how did you become an actress?"

"I became an actress out of fear I would never become one! As soon as I had finished my eighth year at school, I went off to see what I could do. I was accepted at the Moscow Art Theatre Studio School after taking the competitive entrance examinations, both in general subjects and in subjects connected with the theatre. But when they discovered that I hadn't got my school-leaving certificate yet, and was still under age, they sent me back to finish my ordinary schooling. I carried on for another two years, in constant fear that I would not be able to hold out for so long a time. Then after that long waiting period I went off again and sat for the entrance examinations to all the theatrical higher schools in Moscow. I was accepted at all of them, but enrolled at the Art Theatre Studio School, all the same.

"Before I appeared in any films I played more than 20 major stage and television roles. I appeared in *Elder Sister* in over two hundred performances, so, as you can see, success does not strike overnight."

"What effort do you have to put into a role?"

"A role — and here I am referring to the substantial kind of role with scope for the maximum self-expression — demands utter concentration. For such a role you have to probe within yourself and outside. You find useful material in the reference libraries. First I immerse myself in what superficially might seem rather general reading — about the period, the author's style, productions of the play at other times and at other theatres, and about various conceptions of the role."

"Would you say that art demands sacrifices?"

"From a feeling of protest and of hatred for 'sacrifices', I say decisively: No!"

"What dramatic production has left the greatest impression on you in the past few years?"

"Peter Brooke's *Macbeth*."

"What do you think the talent of an actor consists of?"

"If only I knew, it would all be so simple! I can only speak definitely of the qualities I should like every actor to possess: lack of vanity, the ability to admire others, and also to admit that what you proclaimed yesterday may not be right today. But the main thing is that the actor must always be searching, exploring new ground."

"How do you like being a film star?

"Such popularity brings a number of disadvantages. Life becomes unbearable with the telephone ringing all the time, and it is quite impossible to walk about the streets, to sit in the hairdressers or pop into a shop. That's the worst thing about it.

"And it is appalling to hear that women are copying your way of talking, singing, etc.... What I most value in a person is the ability to remain oneself. When I see my portait in cinemas in Moscow or other towns inflated to the size, say, of a two-storey house, I involuntarily shrink. The cinema makes me bigger than I really am, demanding new efforts as regards self-discipline, and particularly where the choice of roles is concerned. I believe that an actress is always urged on by the thought of the danger that she may repeat herself. I refuse to play incidental roles which are not to my liking and I do not want to take a part simply for the sake of staying in front of cinema audiences."

"What are you aiming at in your work?"

"I imagine that all of us are aiming at perfection — and probably none of us can attain it."

"Some people call you the 'sex bomb'. What do you think of that?"

"If that's a synonym for femininity, then that's fine. But I'm afraid that I'm a victim of my own statements — in the arguments about present-day cinema I defend the cinema as an art of emotional impact."

"You acted in the play *104 Pages About Love*, which was written by your husband, Edward Radzinsky, the dramatist, and afterwards you appeared in the screen version of the play, *Once Again About Love*. You are also rehearsing his latest play *Just a Little About Woman*. Probably, whether you mean to or not, you have a hand in the creation of these works, either as a prototype or as an adviser."

"No, I'm only the performer of a role, and our cooperation in this sphere begins only when the play has already been written. This is the rule in our family."

"After your last film you said that you would go back to the Art Theatre and would not take on any more screen parts."

"Yes, I did. Then I played roles at the Art Theatre, and after that went on tour to Japan. And then I realised a long-cherished dream — I prepared a concert-programme of poetry by Marina Tsvetayeva, who has a powerful effect on me not only with the thoughts she expresses, the themes of her poetry, but with her own particular poetic turn of mind. I am very fond of the one-man theatrical performance, which is a developing medium. A second version of the programme will include poetry by Anna Akhmatova. I have chosen the verses of these two wonderful poets, which express a common mental attitude. The difficulty is to find a sufficiently distinct manner of reading so that the audience will know which poems are by which poet without an announcement each time."

"Don't the awards to your films *Three Poplars in Plyushchikha Street* at Mar del Plata and *Once Again About Love* at Cartagena — in both cases at international festivals — convince you that you should return to films?"

"For some years I have refused all offers from film directors, convinced that my main sphere is the theatre. But now there is a new screenplay, in which I am offered the main role, and I am now suddenly nostalgic for the cinema.

"The cinema was one of the rare joys of my childhood. Consequently each time I enter the cinema I am overcome with that same remote feeling of joy, one might almost say happiness.

"I would like my viewers to experience that same feeling from my work. I am very fond of the cinema."

"What would you say to a viewer — a representative of all your fans — if you had an informal chat with him? What would you want him to pass on to the others?"

"I should not say anything very entertaining. I should tell him that an actor's career is a very difficult one, and that the viewer needs to prepare himself to some extent to get the most out of a stage or screen production. He would probably listen with a serious look on his face and assure me that he would pass it all on to the other viewers he was representing; but he would be waiting impatiently for our 'informal' talk to be over so that he could rush off to see another film."

Sifting Fact from Fiction in Science

from LITERATURNAYA GAZETA

At times the press makes a sensation of some matter of scientific interest, such as the 1908 Tungus meteorite or the famous Abominable Snowman. This has given rise to a controversy about the responsibility of scientists and journalists, and about what should be the dividing line between genuine popular scientific information and mere sensation-mongering.

Some people, such as Dr. Alexander Kitaigorodsky, assert that science and sensation are mutually exclusive, but others say that any major discovery is sensational and should be spread abroad.

Responding to the request of *Literaturnaya Gazeta*, several noted Soviet scientists gave their views on whether the publication of new discoveries not yet completely verified was helpful or harmful. These views are given in abridged form here.

Science and Sensationalism — Poles Apart

by Alexander KITAIGORODSKY, D.Sc.
(Physics and Mathematics)

A sensation is something that comes suddenly, unexpectedly, something, for instance, that was quite unknown yesterday and has just today been dug up by a newspaper reporter and made public for the first time.

This cannot possibly happen with genuine scientific information. In the second half of the twentieth century scientific discoveries do not come as a surprise.

In these days no scientific discovery has been able to keep itself so generally concealed that it has eventually come into the world unheralded, exploding like a bomb on someone's typewriter.

Scientific views change slowly and gradually. Scientists conduct their experiments, write articles and monographs and discuss developments with their fellow-scientists, and sometimes this goes on for decades. Then comes the time when the researcher decides that he has completed his work, but even then it does not always meet with immediate public acknowledgment.

The Nobel Prize for science, for instance, is normally awarded for the accomplishments of a decade, or even two or three decades, ago. The rare exceptions to this rule usually occur when the very atmosphere is charged with discovery, and the new is only too apparent and expected. In these cases, too, several years usually elapse before there is general recognition of the achievement, and this is when it really asserts itself, although the discovery is dated from its first publication.

Who gives the O.K. to a discovery? An expert in a particular field will never take it upon himself to pass judgment on the achievements of an expert in another, but experts within a group keep a close eye on each other's activities, and in this way a new idea is first discussed within a narrow circle. A research worker will publish an article in a learned journal, which will be followed by dozens of explanatory statements at colloquiums, and then if there are no serious criticisms, he will risk a statement at a scientific conference. If there are still no fundamental objections, he will then permit himself the liberty of a discreet interview with a journalist.

Discoveries contradicting the hitherto accepted laws of nature are treated with especially great caution by the public. Strictly speaking, the probability of such a discovery is practically nil, for it means the end of the natural law as known in the past. If the law has been found to work satisfactorily in millions of cases, if it has been used successfully in designing thousands of machines and instruments and if it is intimately bound up with the accomplishments of science as a whole, its negation becomes incredible.

Revolutionary ideas and discoveries never assert their truth by completely destroying the work of decades, and they never show that previously known laws are erroneous — all they prove is that the laws were formulated within too narrow limits.

All this is known only too well by every pioneer, and until he is certain that his discovery is not in contradiction to past scientific experience he does not write about it in specialist journals, let alone make statements to the press in general.

Of course, this approach is not to the liking of sensation-mongers among journalists, the most tenacious of whom will continue to try to make a sensation out of a discovery by interviewing pseudo-scientists, some of whom may be sincerely mistaken, and some downright dishonest. There are many regrettable examples, and one notes that the press, with an industry worthy of better application, is publishing mystery thrillers — about the Abominable Snowman, flying saucers, acceleration of radioactive fission under the influence of the human gaze, people seeing through walls, and the like.

Certainly, they are remarkable and most sensational stories and some have even been told before by magicians throughout the ages but tbe difference now is that they are disguised as modern, twentieth century science, and to make it all seem more convincing the views of bearers of scientific titles are canvassed by means of questionnaires. It is correct that a journalist, if he is not an expert, should seek the views of specialists, but he should remember that no scientific degree or position can make a scientist a know-all.

Another point. Even if there were a bare chance of a grain of truth being contained in, say, the various theories about telepathy, it would still be a good idea not to write about them for a mass readership until they are confirmed as truth by science as a whole. They may set off all kinds of weird ideas — fear, mysticism and superstition.

Journalists frequently try to justify their penchant for sensationalising science news with the argument that by airing various problems they are helping some experts to overcome their innate conservatism.

But this is futile.

The press has never stimulated scientific progress. It takes 15 or 20 years to become an expert worthy of the name, and if a hundred experts, all people with varying patterns of thinking, different temperaments and a variety of knowledge, fail to see a problem in their field it simply means that no such problem exists. Even if by some chance it does exist, it is one of these experts or group of experts, and not an outsider, who will discover that fact.

I think that newspapers and popular magazines have the following responsibility: first, to publicise scientific progress and the views of recognised authorities on immediate prospects in their particular fields.

Second, they should popularise science as a whole. It is wrong to neglect this responsibility, and to be interested only in sensation — for this only makes a laughing stock of science. And the simple fact is that it misleads the public, whereas the duty of the press is to spread enlightenment and education.

Keeping out the Hoi Polloi

by Victor BRODYANSKY, D.Sc.
(Engineering)

Although I agree that science should be protected from all kinds of vulgarisation, gossip and cheap sensationalism, as I read Dr. Kitaigorodsky's article I felt increasing surprise and embarrassment for the author.

He claims that discovery is launched in the first place by a narrow group of specialists, but I must remind the professor that the new thing about twentieth century science is the *interaction and interpenetration of sciences* and the emergence of discoveries in borderline spheres. We should be urging that a narrow professional approach be discarded, so that new, comprehensive ideas may be hammered out.

Dr. Kitaigorodsky believes that the trail-blazer should not go into print either for the specialist or the general reader until he is certain that his discovery is not in contradiction to past scientific experience, but this formula is so vague that it would permit any new fact, discovery or theory to be declared absurd or a cheap sensation, since it would be bound to contradict at least a part of "past experience", if it were really a discovery.

Dr. Kitaigorodsky seems to have a soft spot for his "limited circle of experts", stressing its importance several times. An "outsider" would find it difficult to get into such a circle. He claims that it takes 15 or 20 years to become an expert worthy of the name. A man who becomes "an expert worthy of the name" only after 20 years of work should not be in science!

I can just imagine what Dr. Kitaigorodsky would have told Einstein, if the latter had explained to him his special theory of relativity in 1905, when Einstein was only 26, and working in a patent office in Berne, Switzerland — an obvious "outsider" with no positive recommendations from experts!

History shows that discoveries and inventions are frequently the work of "outsiders", and moreover, that expert opinion is not always free of error. There are many examples of this.

This does not mean that experts from a "limited circle" are always conservative, nor does it mean that their opinions can be ignored with impunity. But it does mean that errors in assessing new developments can be made both by narrow specialists and by experts of broad specialisation. And the narrower the expert the greater the probability of error.

A case in point was Dr. Volsky's discovery of the ability of the animal organism to absorb

nitrogen directly from the atmosphere* — a discovery so markedly contradicting the usual theories that highly-esteemed biologists declared the Volsky proposition an impossibility. One of them, Professor Konradi, even went so far as to say that "Volsky's excursions into physiology are such a conglomeration of errors that it would be as improper to discuss them as it would be to discuss designs for time machines or 'experiments' in table-turning."

To biologists, Dr. Volsky, an expert on the strength of materials, was an "outsider" but he drew support from the press and from some noted scientists, including another non-biologist who was a member of the USSR Academy of Sciences. Now his discovery is officially recognised.

Yet, Dr. Kitaigorodsky claims that the press has never stimulated scientific progress. Perhaps the press sometimes takes under its wing some pseudo-scientist or charlatan. But why should this lead to the kind of generalisation put forward by Dr. Kitaigorodsky?

It is not a question of sensation in itself, but of what kind of sensation, what purpose it serves. The "great divide" lies not between strictly scientific statements and cheap sensations but between serious, well argued press treatment and lightweight articles aiming only at spectacular effect.

Protection, Not Isolationism

by Alexander KOMPANEYETS, D.Sc.,
(Physics and Mathematics)

At the risk of being labelled a stick-in-the-mud, I support, in the main, the stand taken by Dr. Kitaigorodsky, and in particular his statement that a scientist should not publish until his work wins adequate recognition from his colleagues.

The checking of a discovery is as important as the discovery itself. Regrettably, not all research workers by any means, have a sense of responsibility to science and society. It is this, I believe, that worries Dr. Kitaigorodsky above all

No scientific discovery has ever been made by anyone "over the heads" of scientists working in the sphere in question. The fact that Einstein was not recognised immediately proves nothing. Certainly, he was working in a patent office, but soon after making his discovery he became a professor, incidentally on the recommendation of leading authorities on theoretical physics. Einstein published only in scientific journals, and it was only after his recognition by physicists that the laurels came his way.

The natural and exact sciences have had their martyrs, but no unrecognised geniuses.

An author of an unverified theory who publishes his views in the press at large knows that at the worst the article will be forgotten and that at the best it may even bring him honour.

Several years ago the Uzbek newspaper *Pravda Vostoka* carried the amazing report that a local mathematician had predicted that his "new theory of gravity" would in time help make it possible to build cities in the clouds which would not crash down to earth. The unfortunate man forgot that elections to the Uzbek Academy of Sciences were pending. Well-meaning friends circulated the newspaper report among academicians, so that at the elections this father of "castles in the air", in contradiction to his own "law", had a fall himself.

Who was to blame for the article about "floating cities"? Journalists on the hunt for sensation? Hardly. It is not the business of the periodical press to report only approved truths. A journalist interviewing a scientist wants to know what is new, wants to be convinced of its feasibility for himself. That is elementary in journalism. Should he have to wait for years until "houses in the sky" are passed by the Housing Committee? On this score I disagree with Dr. Kitaigorodsky. Science stories that are off colour are the fault of the scientists, not so much of the journalists. What one would like the press to do would be to open its columns to refutations and objections to theories it publicises as readily as it makes them available for sensational stories.

The pioneering scientist, who normally makes honest errors, does not bear all the guilt for "sensationalism", either. His well-qualified fellow-scientists frequently deliberately refrain from offering criticism even when they disagree with him. Of course they do — it is worse to be called "stick-in-the-mud" than "liberal".

I think this is what happened in the case of Dr. Volsky's discovery, too. Like most of my colleagues, I cannot believe in it. Meanwhile the press has reported that his work had been given the support of many eminent scientists.

A member of the USSR Academy of Sciences recommended publication of an article by enthusiasts seeking to prove that the Tungus meteorite was in fact a Martian spaceship*. Without saying so directly, the article cites results of obviously erroneous measurements of radioactivity at the place where the meteorite was reported. Probably, everyone recalls the hullabaloo there was in the press over that "Martian spaceship".

* See SPUTNIK, February 1969.

* The Tungus meteorite landed in Siberia in 1908. Speculation about it was the subject of an article in SPUTNIK, June, 1968.

One scientist has claimed that humanity in general reached Earth from outer space, producing as proof what he calls "archeological data", apparently believing that his ability to read the Old Testament in the original, coupled with his knowledge of mathematics, gives him the right to advance such an hypothesis.

If we scientists ourselves do not fight against muddy streams of nonsense, no one else will save us from them.

The Law of Surprise

by Victor LATYSHEV,

Head of the Laboratory, Experimental Design Office, USSR Ministry of Power Industry and Electrification

So, science is free of sensations, and those who were simple enough to believe in scientific sensations now know that they do not exist.

In fact, how can there be any such sensations, in view of the research going on year after year, the multiplicity of experimentation, the endless debates and repeated statements made at seminars?

Long before press publication is considered, the subject becomes boring, even banal. Maybe, then, sensational stories in the science field are the work of mountebanks and ignoramuses?

What strikes one straightaway in Dr. Kitaigorodsky's article is his choice of sensations — they are all arguable and dubious — flying saucers, seeing through walls and so on. However, the history of science abounds in many other kinds of sensations, and I do not think Dr. Kitaigorodsky should have written off even the semi-fantastic sensations, for that matter. After all, the Abominable Snowman is not as fantastic as all that — no one has shown (or is able to show) that he cannot exist, or that he cannot be found. There have been more astonishing discoveries in science than that.

In December 1938, a South African trawler found a strange fish, and the discovery was followed by an extraordinary chain of chance events leading to its identification. First of all, its finders did not throw the fish back into the sea. Then a small local museum in the South African city of East London managed to have the specimen stuffed and preserved. The discovery was brought to the notice of a South African ichthyologist named Smith, who as it happened, made a hobby of studying fish known to have existed in the same forms in earlier ages. The end result of this chain was that early in 1939 it became clear that some of the species known as coelacanths, believed to have become extinct 50

million years ago, had survived. "Sensation" is too poor a word to convey the effect of the discovery of a living sample of contemporaries of the dinosaur.

Such discoveries are rare enough, and science does not rely on them, but every major discovery is a sensation in itself because until the day it is announced, the world at large knows nothing about it: no one suspects that something has been found that will make him look on the world with different eyes. Just imagine the jolt to thinking given by the theory of Copernicus, Darwin's teachings and Einstein's theory of relativity.

No one would deny that great things do not emerge from a vacuum. But every discovery is like a flash of lightning in a clear sky. Only later are its implications realised.

It is not a matter of how the discoveries are made: they can result from luck in experimentation, as happened in the discovery of radioactivity, or they may be the result of years of great, painstaking efforts, as in the case of the theory of natural selection. The world sees only the concise end result, without knowing the scientific process that brought it about.

A sensation is not simply a bolt from the blue, but represents a vast excess of information over what was expected. It would be sensational, indeed, if there were no sensations in science, because after all, the results of scientific investigations cannot be accurately predicted, not even in the second half of the twentieth century to which Dr. Kitaigorodsky refers.

It is a convention that scientists can be divided into coldly calculating rationalists, and romanticists who peer into the future and occasionally risk a prediction about it. Dr. Kitaigorodsky has given the reader an idea of what the first type is like. But there are the others.

In 1895, James Dewar in an interview with the London *Times* declared that he was on the verge of liquefying hydrogen. The very idea that this was possible was seriously doubted at the time. But in a few years Dewar did it.

Then what about Tsiolkovsky? Sometimes we forger how it happened that his works on astronautics found no practical application in his own time. Surely all the scientists, with only one small exception, could not have been so limited in outlook!

But be a rationalist and put yourself in their place. There was no material for the rocket casing and no fuel to power the rocket, apart from the fact that the basic problems of a rocket's movement were still to be investigated. There was only the idea, a flash of genius — and the conviction that the idea would work.

Some scientific problems must be raised in the press at large before they can be solved by scientists, and this applies above all to matters which may appreciably affect the life of society. If a discovery is fraught with potential

danger to society, man should prepare himself to face it. And thought should be given beforehand to the possible benefits, and how to utilise them.

Naturally, every expectation held out by a scientist is like a debt which sooner or later must be discharged. So it is natural that the timid researcher, uncertain of the prospects of his work dreads press publicity like poison.

To a certain extent, I agree with Dr. Kitaigorodsky when he says that the role of real sensations in science has appreciably diminished. But not because sensations are fewer than hitherto, — on the contrary, they are coming hard on one another's heels, more than ever before, while the requirements of science are growing just as rapidly. But the thing is that a century or two ago the main efforts of scientists went into individual efforts to find the big has developed into a powerful dragnet using industrial methods to sift out from the sands the facts it needs. This does not rule out spectacular finds which may lead to revision of long-held beliefs.

Now about the "mysteries". I should say at the outset that I myself share a measure of disbelief in telepathy and flying saucers, for instance, but I also realise that so far nothing has been discovered to utterly disprove the possibility. Those who dislike such sensations should not concern themselves with what they consider absurd, or else they should take the trouble to prove that such things are really absurd. There should be only one requirement: it is research that is needed not scholastic speculation.

As for the opinion of "narrow specialists", where are you going to find "specialists" on flying saucers? Dr. Kitaigorodsky himself, who tirelessly "exposes" such sensations, is not such a "specialist".

The journalist, as well as the scientist, must be able to distinguish obvious nonsense such as perpetual motion from matters that are possible in principle.

Just as we demand proof when objecting to some wild idea we should reciprocate by avoiding hasty, inappropriate "disproofs".

Uses can be found for even the "wildest" ideas. I suppose no physicist would be much interested in the Dead Sea Scrolls but for the hypothesis of the Soviet researcher Mates Agrest about possible visitors from outer space, and scores of volunteers would not bother to spend their vacations travelling to the site of the Tungus meteorite had there not been so much fantastic speculation surrounding it.

It is quite inadmissible to silence facts, something Dr. Kitaigorodsky seems to advocate. That would be the worst possible proof of the weakness of science and of the helplessness of its workers.

Miracles are not worth talking about, but the sensational sides of discovery give a fillip to science. There is no learning without surprises.

The Parachute That Did Not Open

by Mark Zakharov

from the volume of stories
FUNNY AND NOT SO FUNNY

Mark Zakharov was born in Moscow in 1923. In 1955 he graduated from the Theatrical Art Institute, and then worked in the theatre as actor and director. He began to write, and in 1961 his first work appeared. To date he has bad three volumes of humorous stories publisheu.

I tugged at the ring and was horrified to discover that the parachute was not responding.

"The same thing happened to me a couple of years ago," commented a girl I knew from the neighbouring parachute group as she flew down past me.

"And how did it all end?" I called after her, with considerable interest.

"I don't remember exactly what happened. I think things just sorted themseelves out."

I prepared to await the moment when things would sort themselves out. Then I realised with amazement that my acquaintance was falling at precisely the same speed as myself.

"Here!" I shouted after her. "Don't be an idiot! You've forgotten to open your parachute!"

"I'm making a delayed drop," she explained with a sweet smile.

"What an unexpected pleasure!" I smiled too. "So we shall be travelling together, at least for a time."

There was a sinister silence.

"Tell me, shall we be falling for long?" I asked politely, in the hope of somehow relaxing the unpleasantly strained atmosphere.

"I don't know. It's the firs time I've jumped from such an altitude!" my companion answered cheerfully.

"But you're sure we're going in the right direction?" I enquired, just for the hell of it.

"Of course. It seems to me that everything's proceeding normally," my friend said encouragingly. "Look, there's the earth."

"So soon?" I commented with sinking heart, and took a last gaze at her. "You have a wonderful figure," I said in farewell. "A flying suit looks marvellous on you, and in general ... I should be very pleased to ... how to put it ... to spend more time with you in the heavens."

"I, too, have very much enjoyed falling with you," she acknowledged. "I shall never forget this day."

"It's a pity our paths must now diverge," I commented with a philosophical air and looked valiantly at the approaching earth. "You go that way, and I go back up there!" I pointed skywards. "If it were not for this unfortunate mishap I should not hesitate to offer you my heart and hand. I am afraid that in the circum-

stances, though, it may sound a little frivolous. I can, of course, make an official proposal, but what's the point of your returning to earth a widow?"

"You really want to marry me? Then try pulling the ring!" my beloved ordered smartly.

"What makes you think I haven't tried already?" I asked with a smile.

"I watched you tugging at everything bar the ring. You're too scatterbrained to become a real parachutist!"

"Why didn't you tell me before?" I was angry, and did not even touch the ring.

"Pull it! Quickly!" my companion yelled.

"No, answer me first!" I obstinately repeated with a frown. "Answer me, or we'll have a lovers' tiff."

"If I had, you probably wouldn't have paid the least attention to me, and then your happiness would have passed you by!" she gabbled at the top of her voice, not wasting a second. "How dare you! Pull that ring immediately!"

"Don't get in a panic! You're not on the earth yet" I shouted sternly, feeling for the ring and pulling at it with all my might.

In an instant we were floating smoothly to the ground. A crowd of frightened people came rushing from all sides.

"Not to worry, folks!" my fiancée proclaimed joyfully. "I'm going to marry him. Everything's fine!"

That Deep Breath Could Be Your Last Gasp

by **Yuri POLKOVNIKOV**

from the newspaper LENINSKAYA SMENA

Contrary to the generally accepted belief that deep breatbing is good for the human organism, a Soviet scientist has produced experimental evidence which indicates that it is not beneficial and can produce serious and even dangerous effects.

There are about thirty thousand known diseases which may attack man, and medical science uses every means at its disposal to combat them. However, there is one disease, so far not generally recognised by doctors, which far from curing or preventing, they actively cultivate.

Everyone knows that deep breathing is good, it stimulates the system... gives the body "tone"... and so on. On radio and television, in schools and sports training sessions we are urged to indulge in deep breathing exercises... Now a Soviet scientist has produced startling evidence to show that deep breathing can actually lead to hypertension, stenocardia, bronchial asthma and other diseases.

In the conference hall of a Moscow hospital a young girl stood before the audience. "Breathe deeply," she was told by the lecturer. After about ten inhalations the breathing sounds changed to the harsh sounds of bronchial asthma.

"And now breathe as I tell you," said the lecturer. "Exhale. Pause. Now breathe in lightly." In two mintues the fit of asthma stopped and the girl calmly returned to her seat. The lecturer induced fits of stenocardia and crises of hypertension in patients by deep breathing and then, in a matter of minutes, stopped them. It seemed like a miracle,

but there was nothing magical about it. He was demonstrating the newly discovered relationship between the character of gas metabolism and disease.

It all began when Konstantin Buteiko, an intern at Moscow's First Medical College was listening to a patient's chest, and asked him to do some deep breathing. Suddenly the patient collapsed in a dead faint.

"You've overdone it," said an assistant physician who came running to the scene. "You've over-filled him with oxygen."

Why did it happen? Perhaps sudden constriction of arterial vessels in some way protects the tissues and vital organs from extremely intensive breathing? From the physiological concept of the normal, it follows that a surplus or a shortage of anything such as water, food, salt, vitamins, as a rule cause diseases. Perhaps "deep breathing" is harmful too?

These ideas gave Buteiko no peace, but they gave direction to his investigations and in 1960 he was appointed head of a research laboratory at Novosibirsk to study the physiology and pathology of respiration and blood circulation.

The accepted view was that deep breathing gave the human body more oxygen, which speeded up the metabolic processes in its cells and raised their energy levels. The living organism was likened to a furnace in which organic substances were burnt up, and the lungs were compared with bellows which provided the fire with oxygen. The harder the bellows worked the greater the flow of oxygen, the hotter the flames, the more substance was burnt and the greater the energy output, it was thought.

But the work of Buteiko and his research team has proved this theory to be a delusion. Using most sophisticated instruments, including fourteen delicate electronic devices, which were attached to the patient, the researchers were able to make exact studies of the various processes which take place during breathing and in blood circulation.

The "physiological combine" as the whole instrumentation set-up is called, produced about 100,000 figures per hour relating to the patient's breathing and blood circulation.

At intervals of .08 of a second an infra-red analyser recorded the percentage of carbon dioxide in the air breathed in and out by the patient. Another device measured to within tenths of one per cent the amount of oxygen in the air he inhaled. The "combine" registered the rate of inhalation and exhalation, and took twelve electrocardiograms. Using three channels it recorded his heartbeats and drew a diagram of the pulsation of minute blood vessels in his fingers. Beams from an electronic eye determined the amount of oxygen in his blood haemoglobin. Three ballistocardiographs registered the speed and acceleration of body shifts

caused by his heart beats in three perpendicular directions — movements so small that they had to be measured in thousandths of a millimetre!

All this information was processed by a computer and the results obtained gave information about the mechanism of reactions which cause diseases of the heart, bronchi, lungs and blood vessels, and clearly pointed to the dangers inherent in deep breathing.

Impartial instruments reveal that deep breathing does not produce an increase in the oxygen content of the blood since normal inhalation results in oxygen saturation. This means that deep breathing can exercise no positive impact on the metabolic processes. On the contrary, a man "over-fed" with air experiences oxygen hunger. Why?

It is a complicated story. As the infra-red analyser showed, after deep exhalation an impressive amount of carbon dioxide is expelled from the body. That seems to be a good thing, for surely carbon dioxide is poisonous?

But no. Buteiko, who has discovered what has come to be known as a ventilation effect, has established that carbon dioxide is vital to the body — that the vital processes cannot take place normally without it. The cell functions at the optimum level if it contains one to two per cent of oxygen and seven to eight per cent of carbon dioxide. If the carbon dioxide level falls, the activity of the nervous system is disrupted, the alkaline reaction is intensified and the functions of the 700-odd enzymes in the body are changed. This upsets every metabolic process in the body cells, sometimes with tragic consequences.

Dr. Guly, of Kiev, has discovered another important function of carbon dioxide in the buman body. Without it no synthesis of aminoacids is possible.

As only a trace of carbon dioxide is present in the atmosphere (.03 per cent) it has to be produced by the organism itself in the process of metabolism and man has to be careful with his supply. By exhaling deeply he robs himself of it, but he also loses another vital gas: oxygen. How can this be? Oxygen comprises 21 per cent of the atmosphere!

In the process of evolution the living organism has built up protective mechanisms to prevent carbon dioxide leakage. Spasms of the bronchi and blood vessels are a case in point. When man breathes deeply, the greater oxygen supply does not intensify metabolic processes and consequently the supply of carbon dioxide does not increase.

First it is driven out of the lungs, then, by diffusion, the carbon dioxide level in the blood, tissues and organs drops until a critical point is reached and the body's protective mechanism starts functioning. Bronchi and blood vessels constrict and the

outflow channels shut down. But these channels deliver oxygen to the system, and when their function is restricted oxygen hunger ensues.

Shortage of oxygen stimulates the breathing centre of the brain and deeper breathing is induced, which results in even greater constriction of the vessels. It is a vicious circle — the patient gasping for breath inhales deeply and avidly and actually comes closer and closer to suffocation.

Thus the work carried out by Buteiko and his team with their "physiological combine" has shown the mechanism of the occurrence of such common and dangerous diseases as asthma, stenocardia, infarction, apoplexy and hypertension. Once the source of these diseases is clear it is easy to develop techniques to combat them. They consist in re-training patients to breathe. With the help of breathing exercises patients are taught not to breathe deeply — the "volitional elimination of deep breathing".

This new method of treatment appears to be highly successful. According to figures given by the laboratory, only between four and eight per cent of the more than one thousand cases treated did not respond, and in these other factors had to be considered.

Re-training in breathing is difficult both for the doctors and the patients concerned — old ideas die hard, and it is an agonising job to hold the breath when an acute shortage of air is felt. But once the technique is mastered (and this takes from two to three months), those who have done so not only are free of their previous trouble, but they also develop a super-resistance to physical stresses, and remain immune even when their entire family has flu.

Buteiko quotes as an example a young student who from childhood had suffered from stenocardia and had never been able to take part in sport or other physical activity — even climbing the stairs to his second-floor flat made him breathless. He then undertook the course in "volitional elimination of deep breathing". The results were astonishing. Two months later he entered a students' skiing competition, and far from dropping out as his friends expected, he completed the course and obtained fifth place.

Early in 1968, on instructions from the USSR Health Ministry, Buteiko's methods were given searching clinical tests at the Leningrad Lung Research Institute. Forty-six patients gravely ill with bronchial asthma responded well to the new treatment, fits were curbed almost immediately, and after two months all but two had completely recovered and returned to work. The remaining two patients still showed faint signs of the illness but this was attributed to the presence of other diseases and to the brevity of the treatment.

Skimming the Waves

Hydrofoil craft — ships with underwater wings — are several times faster than conventional vessels of the same class; and although they cannot compete with ocean liners in tonnage, their advantage where speed is concerned promises a big future for them.

This article on hydrofoils has been prepared for SPUTNIK on the basis of material in Anatoli Syrmai's book "Ships. Their Past, Present and Future" and from articles published in the newspapers "Sovietskaya Rossiya," "Moskovsky Komsomolets" and "Leningradskaya Pravda".

What Is Born to Crawl Cannot Fly?

It is a paradox, but it is a fact, too, that the fastest of the big liners of today — the American turboship *United States*, which develops more than 30 knots (35—40 miles per hour), in a certain sense differs not at all from the primitive "Ra", the vessel built of papyrus by Thor Heyerdal after the models used by the ancient Egyptians, which averaged about two miles an hour during its famous voyage in summer 1969.

The first vessel was simply a log. Then came rafts and small boats with oars and sails. The vessels were improved bit by bit; oar and wind power were replaced by steam engines, internal com-

bustion engines, and finally atomic installations.

But however much ships have changed, one of their main features is the same today as in ancient civilisations. The hull of the ship is, as before, submerged in the water. In some cases it is fully immersed, as in the case of the submarine, in others it is only partly under the water, as for example, the *United States*, but submerged it is. But water impedes the ship's movement. And the greater the speed, the greater the impediment.

In the attempt to design faster ships, engines were made more powerful and hull shapes improved, but each advance raised costs even more and brought little profit. It looked as though the speed limit for river and sea vessels, whether passenger or cargo, had almost been reached and was only a little over 30 knots.

A solution was found only after engineers had got right off the traditional lines of research and approached the problem in a revolutionary fashion.

Did the hull really have to be immersed in the water as it had since time immemorial? Could it not rise above the water, continuing to be supported by it and continuing to push away from it?

Imitate the Birds Not the Fish!

Rostislav Alexeyev, a Soviet engineer who is now the holder of a Lenin Prize, was fascinated by the idea that vessels should perhaps be more like birds than fish. After many years of research he got somewhere.

Fifteen years or so ago a rather odd pleasure launch was to be seen on the River Volga by the quay side in the port of Gorki. After a short acceleration period it suddenly rose, as if on stilts, so that the bottom of it was skimming above the waves. Through the foam one could distinguish supports which disappeared beneath the water. Not very far down they ended in contraptions that were a cross between fins and wings.

It was these underwater "skis" that pushed the vessel out of the dense liquid medium impeding its movement; now its hull was held back only by an air cushion, which was far more yielding than a water barrier.

Water resistance was not, of course, entirely eliminated — it made itself felt on the wings and the propeller, both of which were beneath the surface. All the same it was far easier for this half-fish, half-bird to move along the river than for a conventional boat of the same displacement and horse power.

This unusual craft, built at the

Experimental launch with automatically controlled underwater wings.

Krasnoye Sormovo shipyards at Gorki, confirmed the correctness of Rostislav Alexeyev's calculations. This was the first-born of the Soviet winged armada.

Now hundreds of hydrofoil craft have been built in the Soviet Union. The biggest of these — the *Sputnik* — can carry 300 passengers and is designed for voyages along main water arteries. With a displacement of a 110 tons and 4,000 h.p. engines it can do up to 50 m.p.h., that is twice as much as a conventional ship of the same class.

For sea voyages the *Cometa*, (130—150 passengers), and the *Vikhr* (Whirlwind), for 260—300 passengers, are being built. They will have the same speed as the *Sputnik*. Of course they will have some special features of design, which will, for example, enable them to stand up to a 6-point storm.

Not Only Fast but Safe

Calculations show that a 6-point storm can radically decrease the lifting force of the nose-wings — the craft may suddenly dash its hull against the surface of the water, which is not only unpleasant for the passengers but puts the ship in danger of over-

strain. To prevent this happening the bottom must rise about 2 yards above the surface of the sea — considerably higher than is necessary on the river. Consequently the wings have to go as deeply as possible into the water. This naturally increases resistance somewhat, but for the sake of safety a little speed can be sacrificed without regret.

Bearing all these things in mind, Soviet designers have really made sure of the safety of their hydrofoils — and they have been put through the most stringent tests again and again.

On August 2, 1968, the hydrofoil *Cometa*, a sea-going diesel vessel designed by Rostislav Alexeyev, entered the mouth of the Thames. Its arrival at the shores of England marked the completion of a 45-day voyage begun in the Black Sea. It had done 3,000 sea miles not only on the sea but along rivers and canals linking the Black Sea with the Baltic, passing through Volgograd, Gorki, Leningrad, Tallinn, Stockholm, Copenhagen, Antwerp, Rotterdam and Dover.

In the Baltic the *Cometa* was caught in an 8-point storm. The North Sea also gave it an inhospitable welcome. But it battled confidently with ferocious winds and waves and off the Scandinavian coast it navigated skerries full of unseen dangers.

"A superb vessel!", commented a representative of the Belgian transport company Flandria. Golden opinions were also expressed by Swedish, Danish and Dutch experts. The "Flying Dutchman" which made up to 50 m.p.h. and overtook ships of renowned sea powers turned out this time to be the product of Russia, which once studied maritime affairs from the Dutch and other European nations.

Since the first *Cometa* came off the stocks at the Krasnoye Sormovo shipyards in 1961, 11 foreign firms have purchased this type of hydrofoil. Two *Cometas*, which are now the property of Yugoslavia, are cruising in the Adriatic. Soviet hydrofoils have also been bought by Bulgaria, Poland, West Germany and other countries.

Some countries prefer to buy a licence to build such ships rather than purchase the vessels themselves.

Faster and Bigger

Hydrofoils are now being built in other countries, too.

In 1962 Sweden's Supramar built one with a displacement of 120 tons and a maximum speed of 63 m.p.h. Supramar also have a bigger (250 tons) and faster hydrofoil (80 m.p.h.) on the drawing boards.

In the United States there are

METEOR hydrofoils are in regular service on Siberian rivers.

The BUREVESTNIK, a turbo-jet hydrofoil, carries 150 passengers and can develop a speed of 63 m.p.h.

designs of ships capable of carrying 300 to 600 passengers at a speed of from 63 to 112 m.p.h.

Soviet experts are particularly interested in a series of designs prepared by the West German scientist Friedrich Wendel. His type of underwater wings cut down pitching during heavy stroms. One of his designs is for a ship capable of taking 500—800 passengers (with a displacement of 1,100 tons and a speed of up to 70 m.p.h.).

Anatoli Syrmai in his book speaks of future hydrofoils with sun-decks, sports pitches, swimming pools and cinemas aboard. The length of these giants would be 570 feet, their displacement 30,000 tons, their engines half a million horse-power and their speed about 63 m.p.h. Its wings would have to be submerged at a tremendous depth — 80 feet. The depth would, of course, decrease as the ship got up speed, and to a considerable extent, but the vessel could only be moored or anchored in places where the depth of the water was equivalent to the height of a six-storey house.

If retractable wings could be designed for the hydrofoil, so that in shallow water they could be tucked away within the hull, that would be quite another matter. In principle this is feasible, but, unfortunately, only for considerably smaller craft.

Tonnage Possibilities

Let us see what would happen if a winged ocean liner were built of the same dimensions as, say, the French turbine ship *La France* (58,000 tons, 160,000 h.p., 38 m.p.h.). To get its hull above the water a speed of at least 93 m.p.h. — more than double that of *La France* — would have to be developed. And for this, fantastically powerful engines would be needed nine and a quarter million horse-power!

Then how much fuel would the trip from London to New York require? A total of 70,000 tons — 12,000 tons more than the ship's tonnage. *La France*, incidentally, can do it on 5,000 tons.

Are atomic engines the answer? Unfortunately, it has been calculated that their weight would be more than that of the hydrofoil.

The advantages of hydrofoils are more apparent in comparatively small craft. With the increase in size the advantages gradually decrease until finally the conventional ship is more economical.

Calculations based on actual experience and not merely on theoretical designs show that the maximum displacement at which a hydrofoil is an economic proposition is just over 2,000 tons, at any rate for the immediate future. For ships up to this size there is still considerable use, especially in the Soviet Union with its countless lakes, inland seas and great rivers. After all, of the 70 big rivers of Europe and Asia, 50 flow on the territory of the USSR. Among them are such rivers as the Ob (2,300 miles) with its tributary the Irtysh (2,655 miles), the Yenisei (2,705 miles) and the Volga (2,305 miles).

The chief use to which hydrofoils will be put in the next few years is evidently passenger transport, and more rarely the transport of goods, above all valuable and urgent cargoes which for some reason cannot be delivered by air.

In the main, therefore, it is comparatively small craft that are being designed in the USSR. It is proposed, for instance, to build a whole flotilla of boats of the *Voskhod* type for small rivers, which will be able to carry the same number of passengers and travel at the same speed as craft on big rivers and at the same time be able to negotiate shallows and rapids without difficulty.

Soviet engineers are continuing to work on the design of sea-going hydrofoils. Not long ago Leningrad shipyards built the *Typhoon* express for tourist cruises in the Baltic and the Black seas (speed 43-50 m.p.h.). There is an interesting feature about its design: its underwater wings are not set in a fixed position but can change their angle automatically, depending on conditions at sea. They are controlled by an electronic device which selects the best course of action for cutting down pitch and ensuring optimum functioning. Even in a 4-point storm the craft can keep up a good speed of 43 m.p.h.

A hydrofoil still on the drawing board: in addition to a gas turbine it has air screws, too.

New Era in Shipbuilding?

It is scarcely any time at all since the first hydrofoil made its appearance, yet today there is a whole armada consisting of many hundreds of such vessels built to dozens of designs. In less than 15 years speeds have been attained that were undreamed of hitherto in water transport, on a par with those of road and rail transport.

River and sea transport on underwater wings is only in the process of "finding its feet". Perhaps, like air transport, it will undergo some revolutionary technical transformation.

A comparison with air transport is quite logical, for hydrofoil designers made wide use of experience in aircraft design to solve their own analagous problems. They have even borrowed many of their terms from aviation.

The history of aviation began with the piston-engine plane. With gradual improvement it reached what seemed to be the ultimate in speed — practically 630 m.p.h. Yet the appearance of the jet engine led to a new leap forward in speed, and today even passenger liners (for example the TU-144 or the Concord) can go at twice the speed (1,562.5 m.p.h.) of sound (750 m.p.h.).

The history of the winged fleet began with the diesel vessel with screw propellers. Like the original aeroplane in comparison with the motor car, it has proved incredibly faster than ordinary ship. But has the limit been reached? Is there a possibility of jet propulsion being used in hydrofoils?

Pioneering again, as with the building of the first hydrofoil in the fifties, the Krasnoye Sormovo designers decided to try out some more new ideas at the beginning of the sixties. They built a 30-seater *Chaika*, which looks just the same as any other hydrofoil outside. It also has the same diesel engine as before, but in place of the screw propeller it has a hydromonitor — the equivalent of the jet engine in aviation.

This device sucks in water from beneath the hull of the craft and shoots it backwards. The jet force propels the ship in the opposite direction — forwards.

The *Chaika* was the prototype for the "Burevestnik", which takes five times as many passengers, the main difference being that the bigger craft has a gas turbine instead of a diesel engine, making it a turbo-jet hydrofoil. Its speed is 63 m.p.h. True, some other hydrofoils can go as fast, but the same kind of thing was true of the first jet planes, after all.

It is not out of the question that the hull of the hydrofoil, which with its streamlined contours gets more like the fuselage of a plane all the time, will sooner or later be fitted with real aircraft engines. For example, piston engines with an air screw. Or jet engines. At any rate the speed potential of water transport has not yet been exhausted — and it is underwater wings that have opened up the way to bigger things.

* * *

When the aeroplane was fitted with ski-floats we got the hydroplane, able to take off and land on the water. Now we have winged ships, as at home in the air as in the water. If the borderline between aerial and water transport becomes any more blurred, can it be that sooner or later we shall have some universal means of transport which can fly as well as it can float — a kind of cross between a submarine and a spaceship?

Computer Warns of Bumps

Sometimes a plane will rear up in the air or, on the contrary, go to a dive, just as though it is hurtling down some invisible pit, even during finest of weather. Such acrobatics are not simply unpleasant for pilots and passengers, they create overstrain and the plane runs the risk of an accident.

Pilots expect such things to happen when they are flying through clouds, especially storm-coluds, or beneath them. But if the sky is clear? How is it possible to tell where a pilot may run into invisible bumps along his aerial road?

Two Soviet research workers, E. Lomonosov, a physics and mathematics experts, and Y. Lunin, a technologist, have analysed the results of more than 7,400 flights. They have discovered that these odd happenings are linked with definite accompanying signs which can be detected from synoptic and topographical charts. Fourteen of the signs (pressure, speed of fluctuations in air temperature depending of height, etc.) were codded and fed to a computer. When these signs were found to be present in a new meteorological situation, the computer warned that planes were likely to find the going bumpy in certain areas.

The accuracy of such forecasts appears to be quite high.

From the magazine **Znaniye—Sila**

Encounters with the Nether World

by Lev Ginzburg

(Conclusion)*

The former president of the reichsbank and minister of the economy of the Third Reich, 92-year-old Hjalmar Schacht, received us in his Munich residence, a museum-like apartment on the Kufsteinplatz.

He was in his study, the walls of which were hung with valuable tapestries and paintings, and sat, legs crossed, in an armchair placed by a window.

When we came in, the old man rose briskly to his feet, screwed up his eyes, smiled and seemed to freeze for a second, as though posing before a camera. His whole bearing seemed to be saying: "Well, you see what one can be like at 92! You see what a man is Schacht!"

Max thrust a book into his hands, a collection of sayings by some of the world's great men. Schacht skimmed over the headings, coughed, mumbled something in an approving tone of voice and reseated himself. Then he stared at me intently.

"You're Russian?"

His restless, small mouth, with its brush of grey moustache, was shaped in an "O", in a perpetual, goodnatured smile.

"So what would you like to know from me? We live in bad times, Herr Ginzburg, very bad times . . ."

* Continuation from January and February issues.

"In what way?"

"Bad because we have nothing left. Do you realise what Germany was a hundred, two hundred, five hundred, a thousand years ago? The Germanic spirit held sway over the whole of Europe . . . Tell me, if you please, who are the Anglo-Saxons, if not a Germanic tribe? And who are the Franks? We say, 'Andalusia'. But the word derives from 'Vandalusia' from the Vandals who reached Spain from Scandinavia. At the beginning of the ninth century, Charlemagne ruled over huge territory in Europe; the Slavic tribes were under his dominion as well . . . In the tenth century, having occupied Rome, Otto I had himself crowned Emperor: the beginnings of the Holy Empire were laid . . ."

He spoke with great elan, setting forth data which he had learned firmly, for all time, probably while still a school-boy.

"The idea of the Sacrum Imperium — the Holy Empire of the German nation — lived in the hearts of the German people for a long time, we placed a special meaning in our concept of 'reich' and Hitler cleverly took advantage of this. The word 'reich' became a lure, a bait with which he was able to catch people who were by no means trusting . . ." He sighed, to show us he was thinking of himself. "Yes. Germans . . ." He spread his large hands with their broad palms. "And how many important Germans there have been! One has only to think of the last Russian dynasty of czars. Even the capital of Russia had a German name — 'Petersburg'! Haven't the Germans made their contribution to your culture by blood? What about Hemnitzer, von Wisin, Catherine the Great? And what now? We scurry around on a scrap of land, we've been turned into a province. It is difficult to even begin to evaluate the colossal losses Hitler brought Germany. And in any case, each nation has its criminals. The French had Robespierre, we had Hitler . . ."

This perverted comparison was typical of Schacht. The Nazis had lost the war, they had survived the tremendous moral shock, they had been caught in acts of organised bestiality of a scope unrivalled in history, and now they sought to present Hitlerism as a normal phenomenon, as practically a revolutionary upheaval with its attendant, inescapable violence. Hitler himself, when he was handed power by the German bankers and monopolists, by the Schachts and the Krupps, gladly called the event "a revolution", believing such a formulation to be the most effective and attractive.

"The only pity," Schacht continued, "is that Hitler appeared so late on the scene. If he had lived 150 years ago, we would be on our feet by now, we would have had a chance to be reborn as a nation."

"You consider that it will take another century and a half?"

"I don't know." He smiled with all his wrinkles. "Everything goes at a much faster pace now than it did in the past. Perhaps you and I will live to see a few changes yet... In principle, I believe that no nation can be destroyed completely. Remember how the Americans massacred the Indinas. By the way, they came from Russia, they crossed Alaska to America. It's been proved... And so? The Indians continue to exist. Think of the Armenians, whom the Turks mercilessly slaughtered! Two and a half million Armenians were butchered and how many are there now? Five million? Six? Listen!" he exclaimed in a shrill voice. "What is there to discuss if the Gypsies — even the Gypsies — have survived!"

Again he stared at me and after a slight pause turned to Max and said:

"So, Herr Max, we Germans need not despair. Everything is still before us..."

"Herr Schacht," I said, changing the subject, "how did you come to the decision to collaborate with Hitler? I imagine it wasn't too pleasant?"

"What do you mean, 'collaborate'?" He roused himself. "I never collaborated with him, it was just that one day he invited me to see him and said: 'Can you help me to liquidate unemployment? Give me money.' And I did. If Chancellor Brüning had requested me for funds, I would have given them to him... My God! If Thaelmann himself had made such a request to me, I would never have refused... But he never asked... That was the problem..."

I thought of the Nuremberg Trials, of the documentary evidense, of the speeches of the prosecutors. Nothing would be gained by my "cross-examining" Schacht today. Quite pointless.

"Read my memoirs," Schacht said. "You can buy them in any bookstore. I wrote about everything, I didn't hide anything... Are you aware that Hitler wanted to kill me, that he imprisoned me in a concentration camp?"

"Yes... But I've also seen a photograph of you and Hitler in the Compiègne Forest which was taken on the day France capitulated. And I've also read the materials of the Trials..."

"I knew it... The Nuremberg Trials..." He made a face. "Read them, read my memoirs. Mr. Jackson shouldn't have tried so hard..."

In spite of all the prosecutors' demands and in spite of the minority opinion of the Soviet judge, Schacht was acquitted. Eyewitnesses have told me how immediately after the decision, Schacht held a press conference and told the assembled newsmen quite seriously:

"Gentlemen: I am prepared to answer any question, but I warn you, I will accept only payment in kind — chocolate, cigarettes, food-stuffs. Your occupation marks, unfortunately, are not worth much."

A few days later, in the "denazification process" he was arrested by the Bavarian authorities and eventually sentenced to eight years' imprisonment — a term which he by no means served in full.

During our conversation he fleetingly touched on this page of his life, a life that had spanned almost a century, that had included ups and downs and that he was now living out in a spirit of optimism, self-satisfaction and in luxury, convinced that all things pass, all things change, but that men of business will always be needed. When he did mention that last arrest and imprisonment, he called it a "great disgrace". Not his own disgrace, but that of Germany...

"He has a good memory for history, don't you think?" Max said when we were outside. "But for some reason, only ancient history. Recent history he has forgotten..."

* * *

The day before we met Schacht, I had an interesting discussion with members of a society devoted to German literature. I described to them some of the encounters I had had and they were curious about the people, though a trifle surprised that I was bothering about them.

At first the conversation was of an exceptionally friendly, even cordial nature. We sat at a long table and had tea and delicious nut-filled pasties and everyone glowed with the feeling that ideology was ideology but tea and pasties did their job and people could always find a common language, especially if the common language was German...

Eeveryone laughed heartily when I described my interview with Schirach, then with Esser* and a stout, grey-haired, gentleman laughed hardest of all. He was a lieutenant-general, a lover of German literature, and the editor of a theoretical military magazine.

"Ach, that old donkey, Esser," he said, still chuckling, "but Hitler, whatever else he was, was not such a simpleton that anyone could influence him, not even the military... He truly possessed a will of steel and himself swayed millions of people. Everyone was subject to him. He experted pressure on the military, not the other way round, and especially on such spineless creatures as Keitel who was no more than an obedient tool in his hands... I was a young officer on the General Staff at the time and I had a chance to observe my immediate superiors and I am convinced that not one of them suspected the impending invasion of

* Esser, one of the founders of the Nazi Party and a personal friend of Hitler's. The section dealing with him is not included in our excerpts. (Ed.)

Russia. So much for the 'military'..."

"But somebody had to work out the details of the Barbarossa Plan. There was such a plan, you won't deny that?" I asked.

"Of course, someone in the top echelon worked it out: Keitel, Jodl, I don't know. Even we got echoes of the plan. I remember, for instance, how surprised we were when we were assigned the task, as part of staff war-games, of working out 'a military operation in conditions of vast spaces'. We were fighting a war against England. What had 'vast spaces' to do with it? And we wondered: was he thinking of Russia? Take note: 'he' not us. He decided everything, in conjunction with his clique — with Goering, Himmler, Bormann — and he was not interested in the opinions of the military."

"And when the order came through?"

"Then all that was left to do was to carry it out — that's natural enough. I couldn't very well leap out of my uniform."

"That means that in your heart you were opposed to the war but couldn't disobey orders?"

"Hm... How should I say it... It's not that simple... To be honest, I, as a native of Silesia, was not opposed in 1939 to the idea that we get back our rightful lands that were occupied by Poland. But to begin a war against Russia?! My God, don't judge us harshly, our lot was not of the easiest. We began the campaign in a spirit of love for the Fatherland and — I don't deny it — we were intoxicated by military victories. The first sobering-up came with the set-back at Moscow. During those days I was appointed divisional commander..."

I looked round at the dozen people seated at the table. They were pale, tense, no one touched their tea or food now. Together with the general they were reliving that long-ago campaign... I skimmed over the faces, seeking a possible "ally" but finding none I asked the general what he considered was Hitler's historical guilt in regard to the German people.

"I don't believe that the root of the evil lies where you are seeking it," he said. "The trouble was that Hitler placed the interests of the German people above all else. Don't look so surprised. He placed them above morality, above the law. When it came to a question of German interests, the law simply did not exist. But nothing should stand above the law. This must be absorbed, this is precisely what we are trying to lay down as the foundation of our doctrine... You know, by birth I am a lawman, I am the son, grandson, great-grandson and great-great-grandson of jurists, even though I became a professional soldier and have served in the Wehrmacht, in the Bundeswehr and at NATO staff headquarters..."

And now I noticed that there

really was something "Nato-like" about him, something up-to-date — the elegant civilian suit, the thick silvery hair, the fashionable glasses. Least of all did he resemble those caricatures of monocled Prussian generals that our cartoonists are in the habit of drawing...

"What do you mean by 'the law' and the 'interests of the people'?" I asked. "Didn't Hitler's laws run counter to the interests of the people and how can it be said that Hitler in any way cared for the interests of the German people when he deceived them, brought shame on them and dragged them into the abyss of war?"

"Ach, you Russians," he said with annoyance, "you are always recalling Hitler. You do it a lot oftener than we do. However, if you wish to pursue the subject, then you should realise that the terrible thing about it all was precisely that Hitler was absolutely convinced that he was acting in the interests of the people!"

There was an approving murmur at the table and the general, inspired, continued:

"He had an exalted aim, and at times an exalted aim demands much bloodshed. Think of the French Revolution, the Jacobins. Didn't many innocent people lose their lives then? But it mustn't happen again. No matter how noble the aim, the law must not be violated... Are you aware that the military suffered under Hitler no less than others? Statistics show that he executed 119 generals and nearly 80,000 German soldiers. Nearly 80,000!"

"Which means that there were military men who dared to 'leap out of their uniforms' in order to carry on a struggle against Hitler?" I noted.

"Certainly, of course! I'm not defending Hitler or his methods."

"But you're defending his aims..."

"Listen," he said, "when we began to believe in Hitler, we didn't follow him because we wanted blood, killings, genocide. We believed that he would bring good to our people and make Germany powerful and majestic. But it didn't happen that way..."

It was obvious that all the lovers of German literature sympathised with the general and I was suddenly overcome by the urge to give these people a word-picture of occupied Europe — the ravines filled with corpses, the mass graves, the concentration camps, the gallows. I spoke descriptively, and as concretely as possible, in the hope that I would reach them emotionally. All that happened was that their faces hardened and it was clear they considered my speech tactless. The general, very angry, interrupted:

"Yes. There was a war on. And when there is war, there is bloodshed and people kill each other. Your newspapers call us revanchists, which makes us indignant... What is 'revanchism'?

What do you mean by calling us revanchists? True, we dream of uniting our country. The army stands on guard to defend the interests of the people, but having joined NATO, we have denied ourselves the possibility of acting independently. We are under the orders of a unified command. The Bundeswehr, as such, is only able to carry out police duties. Without the agreement and participation of its partners, it cannot come out against the USSR, or Poland or even East Germany . . . Today we have a different army, subject to law and true to the Atlantic principles."

He then commenced to nibble at his nut-filled pasty. The discussion, he considered, was at an end.

I asked if there were many supporters of von Thadden in the army.

He chewed and swallowed.

"You meet a few now and then . . . There are young men who would like to restore Germany to her rightful place. These people willingly go into the army. Among them there are members of the NPD. But what is so frightening about that? Read the NPD programme — where do you see even a veiled hint about genocide, gas ovens or expansionist wars? The NPD is completely different from Hitler's party, whose bible was Mein Kampf . . ."

"It follows that you've read Mein Kampf and couldn't have helped being aware of the aims Hitler pursued and what 'interests of the people' he had in mind . . ."

The general put aside his unfinished pasty.

"Naturally, we read Mein Kampf but we thought it was a personal book, written in prinson and in the heat of the polemic and no one took it seriously. Who could have imagined that Hitler was so dogmatic about his ideas?"

Quite unconsciously, he was repeating almost word for word what the accused had said in their defence at the Nuremberg Trials.

I decided to ask a final question:

"Tell me, Herr General, if there is no revanchism in West Germany, no 'spirit of Hitler', then why do such indubitably intelligent, honest, even leading Germans, such as Heinrich Böll, for instance, write about it with anxiety? You won't deny that he's talented and honest?"

"You see, leading writers are sometimes bad politicians. I believe that Heinrich Böll is an honest man, but he is a pacifist and managed to put in all six years of the war as a medical orderly. What would you expect from him? And then he has the writer's pretension of teaching us all. Excuse me, I myself to some degree am connected with literature, but the striving of present-day writers to teach everyone sweet reason has become an occupational disease. At least, that is the case with us . . ."

* * *

I remember another evening in Munich, spent in a narrow circle of intellectuals. The group consisted of professors and teachers and one pianist, a woman. These people were all markedly "European" in their outlook. It is not exactly a fashion, but many people today instinctively cultivate a feeling of "Europeanism" as a counter-reaction to the "Americanism" so recently prevalent.

At the same time, everyone present, with the exception of myself, was German and in the course of the conversation the lady-pianist suddenly asked me what I would write when I returned home about my impressions. Did I have a positive or a negative picture of the situation? The hum of conversation ceased and everyone began to stare at me as though something depended on what I wrote, as though it were in truth important to them to know my opinion . . . But obviously, it was important to them to know what a man from the Soviet Union, from Russia, thought of Germans (in this case West Germans). Was he capable of appreciating their hospitality, their cordiality, their good-will? And so they stared at me, in expectation of my evaluation.

I replied somewhat evasively, saying that I would do my best to write only about what I had seen, without adding anything . . .

People nodded their heads and again resumed talking about Max Beckmann's latest exhibition, about rational nutrition, about the president of the republic and about "those cretins in the NPD". An argument developed around the question whether von Thadden's party should be banned. Someone expressed the opinion that there was no point in banning parties, people should simply be educated in such a spirit that the neo-nazis would fail of their own accord. Others maintained that the government should interfere with their activities and put an end to the legal existence of the party.

All of them were unquestionably opposed to Nazism, opposed to dictatorship, and the mere thought that there could ever be a repetition of the past caused them to shudder. And then, and then . . .

"You understand, there is nothing worse than totalitarianism because it denies man a choice. Today I am free to do as I choose, to agree with government policies or to protest against them, to live here or go abroad . . . But under a tyranny?! Ach, of course, I wouldn't turn into a killer or a stool-pigeon and I would do my best to get out of things, but I would be bound to turn into a passive accomplice of evil because I would become a little fish, unable to escape from the aquarium. That's all . . ."

That was said by a professor.

"No, you are wrong," a colleague of his contradicted, "because in any circumstances a man

must remain a man. Think of the White Rose!"*

"Gentleman, don't pretend," said the lady-pianist. "I don't know about you, but as far as I'm concerned, I konw that I could never stand it, I would betray everyone, even my most dearest, I would say God knows what if they started to beat me... I can't stand pain, I even scream at the dentist's... And what would I do if one fine day I was taken to the Gestapo?"

And they continued to talk about fascism as the greatest inconvenience for honourable people because to a scoundrel it didn't matter what system he lived under, but an honourable man must have the right conditions in order to show his integrity without losing his head.

"You say, 'the people'," said the pianist, "but what can the people do? The people are ignorant, easily deceived, they believe what they read in the newspapers... No, no, don't think I look down on them. The people are good, kind, hard-working, all that is true and no one wants war. Wonderful, isn't it? But then somebody begins to tell the people: you are being threatened, we must defend ourselves, the people must be united and so on and so fortb. And gradually the people become imbued with the consciousness of 'national tasks'... Or, let us suppose that the 'critical faculties' take the upper hand, that the people understand everything and do not believe official speeches — everything is in order... And then you receive your call-up. What then?"

It seemed that the outcome of anything did not depend on them; for that matter, nothing depended on anyone (which means that nobody had to do anything because it was useless anyhow) and if I write about Nazi crimes, I should take into consideration that nobody would become, say, chief of the SS Sonderkommando if there were no SS and no such posts as "chief of Sonderkommando". As long as there was a position of executioner, a position of gestapo chief or position of führer, then someone would be found to fill them. But if there is an executioner, then there is a victim and necessarily a bero — a role which they would find difficult and unrewarding.

"God save us from the time," someone said, "when we are again in need of heroes. Man should live a natural life and die a natural death, in bed, not on the battlefield or the guillotine... Let us defend our spiritual values but let us not forget that we ourselves represent a value. Therefore, let us try to save ourselves first of all..."

Discoursing in this manner they gradually calmed themselves and the conversation flowed once more along well-worn channels.

* An anti-fascist underground organisation of students which existed in Hitler's Germany.

It was the typical amorphous talk of intellectuals who do not know what to expect tomorrow and are not at all certain what chair they will occupy on the morrow: the professor's or the minister's, the hard chair of the suppliant or still worse, by the whim of brutal, blind powers, the hard bench of the accused.

In parting, they stretched out the "hand of friendship" and repeated what I had already beard more than once:

"We don't want the Russians to think ill of us... So much ill-will has mounted over the years, and all because of politics, because of propaganda. People are terribly misinformed..."

* * *

Max telephoned me from Munich:

"How are things going, how are you? ... I met Fritz Wagner the other day, remember him? And yesterday Speer rang me up, wanted to know how your book was coming along, probably worried about how he comes out..."

As I listen to his voice, my Munich experiences seem more and more unlikely, other-worldly, even though, unfortunately, everything I saw and heard happened and was reality.

In Lieu of an Epilogue

He came, a man witb a tired, lined face, hard eyes, in a roomy suit the colour of his unruly grey hair.

He listened to me with comradely interest and at the same time with a tinge of not exactly disbelief, but rather of checking. Over the years, I suppose, he had become accustomed to inquiring what lay behind a companion's words.

Sometimes he nodded, sometimes his face grew detached, cold, as though he were rejecting words which he deemed inaccurate or incorrect.

"Germany has always shown mercy to its criminals," he said at last after listening to me for half an hour. "In 1848 we did not execute our kings and in 1918 we did not execute the Kaiser, Hindenburg, or Lüdendorff who were all responsible for the deaths of millions of Germans... In 1945, Goering, Kaltenbrunner, Keitel were not tried by Germans! From time immemorial, German reaction has considered itself immortal, not punishable. To this day, it has not yet learned to fear retribution!"

"Out of the Nazi criminals convicted by West German courts, 80 per cent have been rehabilitated. And for that matter, who are the judges? Now they have thought of a new loop-hole: these legal minds now demand that there be proof that a crime was committed out of base motives. How do you prove that? Who can prove that? Their prosecutors?!" He laughed bitterly. "Tell me, have you run into a single Nazi who confessed that he acted out of base motives? Think of your conversation with

Speer. I suppose he admitted it? No, for me the question does not exist — whether to believe Speer or not. If he is truly repentant, then he should say: 'Yes, I was a murderer, I acted solely out of the most base and low motives because there could be nothing lower than the desire to serve Hitler.' But will he say anything like that? Definitely, no! As for the nature of totalitarian governments, I think we can manage to examine the question without the help of his memoirs!"

With a gesture he swept aside the Speer episode.

"The ones who really want to repent are thrown out of windows, murdered in a dark street or forced to commit suicide. You're familiar with the Savada affair? He was found dead. Listen, let us speak the language of politics: what talk can there be of 'repentance' when they don't consider the Nazi regime itself to have been criminal? Hitler's public officials are paid colossal pensions! Do you know of a single instance where these 'repentant sinners' have refused to accept the money — a life pension for their shameful services? What is there to be surprised at? The government apparatus, the foreign ministry, the police, army, above all, the economy, have all been re-established by those who brought Hitler to power. Are you aware that in the 1950s, Schacht travelled all over Europe and America lecturing, recruiting support for Adenauer? The roots of present evils are hidden in Nazism . . ."

He searched the air with his forefinger, as though seeking for those "roots".

"If you want to write a truthful, much-needed book, try to penetrate to the essentials and do not be misled by external appearances. The parallels between fascism yesterday and fascism today pass beyond the framework of purely surface, verbal coincidences and are not limited to the NPD alone which certainly enjoys government support in spite of differences and name-calling between von Thadden and certain official leaders. As Marxists, we are concerned witb the essence! And the essence consists solely of the fact that both strive for moral, economic and military hegemony in order to become the decisive factor if not in the world, then at least in Europe. It must be said that they have achieved some of their aims. In the sphere of finances and economics there is a consciousness of their own strength, a self-assurance. More and more often, even in official speeches, a patronising attitude to the English, French, Americans, shows through . . ."

He spoke without regard for his time, considering it his duty to clarify for me what he considered important.

"The monster of German nationalism has once more reared its head: we are Germans, we can do anything, we created our

'economic miracle', we — just listen to this — we, even in the DDR, in the 'eastern zone', under conditions of communism, have achieved a high standard of living and high productivity! You understand? They take credit for the socialist achievements of the DDR! They ascribe them to national characteristics, solely to the hard-working qualities of the German people and the so-called national genius for 'production'!

"Today there are people who once more are dragging out into the light of day the idea of 'national consciousness' with its banal traditions, its idealisation of the past, its 'great Germans' from the ranks of double-dyed reactionaries who through the centuries have caused truly great Germans to vomit . . . No, not at all, I am not against romantic monuments of the past, not against museums, even though any of those monuments can be interpreted and utilized in different ways, particularly in conditions of reaction and in an atmosphere impregnated with chauvinism. But just try and say that! The cry goes up: 'So, in your opinion Germans must not love their homeland, must not be proud of their history?' Why not? we say. We can be, we should be . . . But what kind of homeland should we love and what kind of history should we be proud of? Read the school text-books. None of these 'patriots' and 'lovers of the past' mention Thomas Münzer, or the Silesian weavers, or the heroes of the 1848 revolution or Bebel, or Liebknecht!

"For them, history is Friedrich Barbarossa, Friedrich II, Bismarck, the campaigns of the mercenaries, and the vile idyll of petty-bourgeois existence! Even their ignominious defeat at Stalingrad, the whole epic of the rout, they regard as an example of the endurance of the German soldier who in 'unendurable conditions of the Russian campaign' carried out his 'soldier's duty' even though the carrying out of that duty entailed, objectively, the greatest national crime!

"Little by little, using guile and trickery, they are quietly rehabilitating Hitler. After all, he is a part of their history, their biography, their past, and they will not, cannot, part with him. 'Hitler possessed a magical power, Hitler cast a spell over people' — you will find such sentences in all their memoirs. Their writing is intended for the man-on-the-street and is a pitiful attempt both to justify themselves and to reassert themselves. But who, exactly, did Hitler 'charm'? Whom did his 'magical powers' mesmerize? Schacht? Krupp? Schirach? The berserk hordes in the grip of ferocious greed? How was it that the 'magical powers' did not affect communists, or the heroes of the Underground or for that matter those Germans — and they waren't so few — who preserved their conscience and sanity?"

The thought crossed my mind: how despondent some of the

people I had met would feel if they were present at this conversation. Had it all been in vain — Hitler's struggle, Himmler's "special measures", Eichmann's trainloads of people, the ovens of Dachau — since 25 years later a man who was once no more than a number in a concentration camp, had reacquired not only his name, but a voice as well, and the power to again meddle in the affairs of "their" Germany?! Who was responsible for such an unsatisfactory situation?

He continued:

"As a matter of fact, nationalism can wear the mask of 'Europeanism' which is a particularly dangerous and widespread form of mimicry in our country. I caught echoes of this latest swindle in your story of Schirach. Just think: Baldur von Schirach — a 'cosmopolitan', 'European'! And that NATO general, the editor of a magazine! But what is their understanding of Europeanism? Whatever the character of a united Western Europe, they believe that Germany must become the leading force. I already said that in the economic sphere they achieved much. Now they must achieve political hegemony. When this happens, all 'atomic limitations' which so far still exist, will disappear and then they will dictate their terms. At first in conjunction with the United States, and then, if possible, without it . . ."

I was meticulously jotting down his words in my note-book and he, noticing, said:

"I didn't intend to give you a lecture, but if anything I have said sheds some light on the meetings you have had here, then from my point of view, I have done some good . . ."

Once more, the images of the people I had met in their villas, apartments, in Max's study, flickered past. What baggage had they brought with them into the present day? What lessons had the past taught them? But now I saw them in a new light, free of emotional colouring. They had taken up certain positions from which my companion methodically knocked them down, shoved them back into non-existence, as though drawing a line beneath my encounters with the nether world . . .

We began to talk about possible perspectives, about the balance of political forces, about the youth, for whom, as he said, "it was worthwhile fighting". They had to be understood, they had to be helped to find themselves, the spontaneous protest of youth had to be channelled in the right direction . . .

* * *

Towards the end he did not pronounce the usual words — that the struggle is difficult but victory inevitable. He didn't have to say them. He knew that life goes on, that the struggle between good and evil is unceasing and that trains go in different directions . . .

November 1968 — August 1969.

Lazar Karelin was born in 1920 in Moscow. At the age of 23 he graduated from the scenario faculty of the USSR State Institute of Cinematography. He took part in the Second World War. He has written many screenplays, short stories, essays, novels. His first tale, JUNIOR COUNCILLOR AT LAW, published in 1951, was very successful, as was the novel THE NEIGHBOURHOOD, which dealt with the life of Soviet youth. Karelin's latest novel, EARTHQUAKE, was published in 1969 in the magazine DRUZHBA NARODOV (Friendship of Nations). The book is concerned with the tragic earthquake which took place in Ashkhabad in 1948. At the time the author was living and working in that city. Karelin dedicated his novel to the memory of friends who lost their lives in the disaster.

by Lazar KARELIN

from the magazine NASH SOVREMENNIK (Our Contemporary)

The Golden Lion

He could have had a different life. If he had not left his first institute he would now be an electronics engineer and most likely a military electronics engineer, seeing that he would have graduated in the war years.

And he would have different habits, different pleasures.

Oh how many differences there would be in his life!

It's time to get up. Ahead stretches an endless day and nothing to do. How to get through this day, how to devise something that will be of interest? Good question. And it's not as though you have no work to do. Certainly not. You have plenty of work but the difficulty is that it's up to you whether you do it or put it off. You're free and independent. Having finished the scenario faculty of the film institute at one time, you're now free to write or not write your scenarios, free to begin a major work or fool around with something minor.

You're free to get up now and do nothing. You are condemned to a long day of holiday, you can do what you like with it. Yes, whatever you like, you can even begin on a work of genius. Just like that, you can start writing and from the very first sentence know that it's the real thing. You know it because of the unexpected serenity that descends upon you. And then your wretched freedom will end, you will become the slave of your creation, the slave of those people you have invented, whom you endowed with life, in whom you believe as though they exist. Marvellous slavery, wonderful thraldom! But how, how to achieve that state of bondage?

He decided not to bother making coffee. He decided he would walk to the nearest cafe. He was master of his thoughts and even a judge of them, sober and impartial. And nevertheless—from the liquor perhaps, or maybe because the hour had come—a certain elation came over him, a feeling of recklessness. He decided to take off. Where? Far away, to the city of Alma-Ata. When? Right away. Why? Because . . . because that was where it had all started. The days of his youth, of student life. From there he had gone into the army, gone away to war. There he had loved. And there she had remained, his first love. He had left her behind, forgotten her, thinking that ahead of him lay many such encounters.

He had to go back to the beginning, to the sources of his adult life. And figure things out. The time had come. She was no longer there, that girl, a whole eternity had passed, but it was still necessary to go. Immediately. By plane, so that that very day he could stand on that earth. The time had come to fly there.

The plane held its course for the east, then shifted south-east. After five hours in the air it was over Alma-Ata. It was a miracle, when all is said and done, that in

a few short hours such vast expanses of the earth's surface could be crossed.

Night shrouded the road from the airport to the city. And the city, when he arrived, did not jog his memory in any way. Trees and street lamps, a wall of trees lit by the dim lights and the dark outlines of slumbering houses. Unfamiliar shapes. An unfamiliar city.

He had expected that the hotel would be full, but they found him a room. His credentials helped — the cherry-coloured leather stamped with gold — the credentials that informed the world that he belonged to the glorious fraternity of film people.

In the morning he was suddenly burning with impatience. He was surprised at himself: why wasn't he out on the street when it was already dawn?

And there it was — the street. Few passers-by. It was early. It seemed that even the trees were not quite awake. In some the wind played, others still drowsed. There they were, the famous, century-old poplar and linden trees of Alma-Ata.

But the city continued to remain alien. Recognised, but unfamiliar. So far, Vasin had not run into a single remembered landmark. He didn't even know where he should head for. The mountains lay straight ahead of him and to the left, but he kept turning and twisting down side roads. The familiar and dear must be just around the corner. Another step, another turn and it would be before him.

And true enough, he suddenly saw the church. It was close by, but screened from view by trees. A few more steps to the side and it rose before him. The same church, in the middle of the park. Very Russian, very unexpected under this cruel sun which was beginning to burn hotly. The same church that he remembered, that he had preserved in his memory forever.

How much Vasin recalled while he stood gazing at the church! His eyes began to blur, he remembered so much. Flickering among the trees shone the red hair of Vika. She used to wait for him by that bench. Waited impatiently, she found it hard to sit still. And as soon as she saw him approaching, while he was still far away, she would jump up and run to meet him. Her great big anxious eyes would swim towards him. She would race up, out of breath, and then suddenly calm down and quietly adjust her steps to his unhurried walk. Vika from Leningrad. By the time they had got her out of the blockaded city she had lost all her strength. It had taken her a long time, here in Alma-Ata, to recover, to slowly become herself again.

They had met in a students' canteen. Vasin saw a slender, transparently thin girl. She had thick, red hair. It was so thick, such a visibly heavy weight for that fragile neck, that Vasin felt

like supporting the red gold with his hands. She sat at a table, hunched over, and spooned the food into her mouth with concentration. It was nothing but a murky liquid. Vasin took his own plate and emptied almost everything into hers. He did not need to ask where she came from. At that time everyone could recognise Leningraders. At that time, for that matter, people could instantly and accurately identify anyone and where he came from. And this one had the Leningrad puffy fingers, and the Leningrad blue veins on the unbelievably wasted neck, and the Leningrad wise eyes.

The girl did not say anything, only glanced at him with her great eyes and accepted the offering. In those days everyone tried to fatten up the Leningraders, there was nothing special about his action. Nothing special, only their love began that day. They established they day and the hour later. But that day she finished her soup in silence, scraped the plate clean to the last drop and left, with a bare nod on parting . . .

In the institute he was regarded as a fine fellow. In his fourth and final year he was considered to be a romantic. His favourite writers were Jack London and Bret Harte. He was fond of adventure films and generously forgave them their primitive character. Everything was simple and straightforward for him some 23 years ago. He had his favourite writers and favourite heroes who could serve as models, he had the profession of scriptwriter, unlike some a romantic and fascinating profession. Only the war . . .

He had already tasted war. He had been a student volunteer in Moscow. The Germans were pushing on Moscow, the regular troops were in retreat. It had been a tough go. The students dug shelters, ignoring bruised and bleeding hands. They received their footwear when already on the march and the feet of most of them who did not know how to handle footcloths were raw and bleeding, too. So that was the kind of war Vasin had tasted. But he didn't see any fighting. Not long before the first serious clash with the Germans near Moscow, the older students in the division were recalled to the capital. The order came down: let the older students finish their studies, they would have time enough to fight. And the whole institute group, 40 people, were loaded into lorries and driven to Moscow. Along the way they had been bombed, once and then again, but they got away all right. In Moscow they learned that the institute had been evacuated to Alma-Ata, along with Mosfilm Studios.

The wide avenue led Vasin higher and higher. Birches lined this street and Vasin remembered them. At the time he had singled out these trees because they reminded him of his native parts around Moscow.

There it was — his institute. Whole, thank God, and unchanged.

It was Sunday. The building was empty and uninviting. Vasin lost the desire to go in and look around. And why had he come here?

But something nevertheless held him, did not permit him to turn and go. Memories, memories. Not happy ones, but shameful, bitter memories. He remembered an episode, probably the most shameful and bitter experience that he had lived through in this dismal building. He recollected his diploma work. It had been a documentary scenario. He had considered one subject after another and finally his choice had fallen on the defence of Moscow. It sometimes happens that way, you spend months searching for the theme that is close to your heart and then in haste grab at the one that is most difficult and foreign to you. The defence of Moscow—no joke! But in his conceit he maintained he could handle it. After all, he had been a volunteer on the Moscow front, he knew a thing or two about war. And he had knocked the script together. He had really gone to town. The only thing was that what he personally knew about the war never got into the script. Even that little bit he knew, even that didn't get in. He wasn't going to write about bleeding feet, surely, with such a canvas before him. Vasin put aside his experiences and wrote a lively, brisk little script in which war did not appear at all fearful, rather beautiful in fact.

He liked his scenario, so did his professor. Not delighted with it perhaps, but he liked it—it was a professional job, sensible, tautly written.

Came the day when his diploma work was to be viewed. Vasin could clearly see the auditorium, his fellow-students.

What was most humiliating for him that day—Vasin now tried to escape from the thought but couldn't — was a phrase he had overhead. Everything had gone so well! The script had been read beforehand by the board, their opinion was already known. And his fellow-graduates had praised it, emphasising what a good job he had done and in less than a month at that! Everything was going fine. And then the remark overheard . . . Clipped, uncompromising: "Nothing worse than to start lying in youth." And that was all, that was all that the most important man on the board had said behind his back. Not the most important man in terms of position, but the greatest talent among them. He was a cheerful, immensely charming man, with a broad forehead and curly hair. Actually, Vasin might have missed the remark. The man had not raised his voice, he had even

lowered it, out of pity for the boy . . .

How long can you continue running from a searing, shaming memory? Vasin stopped. There was no escape anyway.

The shame drove him further up the asphalted road. The road fell into a hollow, then rose up again and led to the gates of the zoo. Well, if it was to be the zoo, so be it. It would even be interesting — to visit the zoo in Alma-Ata.

Vasin tramped and tramped, from cage to cage, and marvelled that within him there lived not the slightest spark of curiosity about these live creatures behind bars. He felt only a strange, inexplicable guilt before them. As though he had driven them into captivity. And even if he hadn't, that it was up to him to set them free.

Obeying the commands of the arrows, Vasin wandered towards the lions, the elephant and the monkeys. He wouldn't bother with the monkeys but he would take a look at the lions. From childhood he remembered that even caged lions remained lions, majestic, filled with a sense of their own worth. Vasin needed a spiritual rest. The deep-chested lion with his magnificent mane would roar at him, raise a powerful paw and freeze — like the golden lion of the film festival. Vasin wanted to be frightened by the lion, even if it was behind bars. It would re-establish justice.

The lion did not soothe him. It was a pitiful animal, the fur on its belly matted, the mane thin and sparse like the mane of a rocking-horse that has been ridden by countless children, the legs thin and bent and old. And the lion's eyes were rheumy and blurred. He was worn out.

Vasin located the arrow that pointed to the exit and followed it, joyously accepting its directions.

He returned to the hotel. In the corridor a man's soft, melodiously hoarse voice hailed him. Vasin looked round but the corridor twisted and hid the man who had called his name from view. Vasin halted. How nice it would be to meet a friend! To sit down at a table and . . .

The man came arround the corner, his hands outstretched and Vasin, barely recognising who he was, threw himself towards him and they embraced like the dearest, the very dearest of friends. Only recently they had run into each other in a crowd at the film club in Moscow and had merely cordially nodded to each other across the lobby and that was all. In Moscow it seemed that there was a different attitude to friendship, a different rhythm of life. Too much turmoil and ferment? Probably.

"Rishat!"

"Volodya!"

They had studied together, right here in Alma-Ata. Only Rishat had entered the institute when Vasin was already in his final year. Rishat was a local boy.

Jostling together in the narrow passageway, their arms still about each other, they began to slowly move forward.

"Have you been here long? Business at our studio?"

"Came in last night. No, nothing to do with the studio. I hadn't even intended to drop in but I see now that was a mistake. I'm so glad we've met, seriously, very glad. Here's my room," Vasin said, opening the door.

"How is it?" Rishat quickly asked. "Have they fixed you up all right? Why didn't you wire?"

He crossed the threshold and looked about inquiringly with the air of a proprietor. "Hmm, it'll do, I guess."

"Thank you, I like it here. It's not for long anyhow. Sit down, Rishat. How about a drink in honour of the occasion?"

"Thanks, friend, but it's a working day for me. In the evening, how about coming up to my place?"

"You're filming something?"

"Yes. But now all my work is in the cutting room. By the way, have you seen my last picture?"

"No, not yet."

"Too bad."

"As soon as I get home I certainly will," Vasin said with conviction. "And I'll write and give you my opinion. I promise."

"Where will you see it? It's long gone off the screen."

"Listen," Vasin said, not wanting to be left alone, "how would it be if I saw it here? I'll go with you now and see it. You've got a print at the studio, I imagine?"

Rishat's face shone. He even laughed with plesure.

He had not intended visiting the studio, but there it was. He had wanted to get away from the film business at least for a day, but no such luck. And a screening at that, with the inevitable talk afterwards which might not be of the easiest kind.

"Come on, let's walk around the studio," Rishat invited him. "While they're setting up the film you can reminisce. You'd like to, probably?"

Vasin meekly trailed after Rishat. They wandered up and down stairs, through passageways, and eventually ended up in the cutting room where Rishat was working.

Suddenly, one of the girls who had been so absorbed in her work that she had not even raised her head when they entered the room, now straightened up and called softly:

"Volodya . . . Vasin . . ."

The more softly one is called, sometimes, the more loudly echoes the heart. Without turning, Vasin indentified the voice. Without turning, he saw a plump, forever laughing girl, Vika's friend. He saw her in some dimly lit hall where a dance was in progress. And he heard the music. Or was that a ringing in his ears? He looked round. Yes, it was she. Sonya, the butterball, Vika's closest friend. It was she, even though an ageing, faded woman stood before him. And only her

voice, her voice alone, had not surrendered to time. And she began to talk; knowing that her voice was still young, she defended herself from Vasin with her voice.

If you shut your eyes, Sonya stood before you. Her funny voice rang, the words tumbled over each other and it did not matter what she was saying. A cheerful voice, lighthearted, and the sense of the words was unimportant. But how could you shut your eyes? You would insult the woman, betray your agitation, your pain for her.

"Do you know that Vika is here, in Alma-Ata? After the wr ended she went to Leningrad but then returned. She didn't like her native city, after everything, after the siege. So she came back. She went through a lot — God spare us! She had a bad time . . ."

What was she talking about? Whatever was she saying? Vasin listened. He heard every single word and could have repeated exactly what she had said, but he did not believe his ears. He must have misheard. Vika here, right here, perhaps strolling down the street outside? No, impossible, he must have misheard.

And Sonya went on chattering, a chatterer she had been and a chatterer she remained.

"It's still tough for Vika . . . But she's a brave girl. We're all proud of our Vika."

"You say Vika is in Alma-Ata?" Vasin used all his willpower and produced a smile. "Well, Sonya, when you see her, give her my regards."

"Give them to her yourself. Don't pretend! Time is too short, chum, for us to pretend. Phone her and see her. Have you had so many Vikas? Eh? No, I didn't think so. She'll be happy to see you. She remembers you. Not often, but sometimes . . ."

"She remembers me?" Vasin went out and nodded to Sonya from the doorway and mustered up another smile by way of farewell. He left without asking how to get in touch with Vika. He had no intention of doing so.

Rishat did not remain with Vasin to watch the film. He pulled the curtains firmly together and left, saying: "I'll be back before it's over. We'll have lunch somewhere."

He left. Vasin was alone in a strange room with the curtains drawn. And the film would take at least an hour and a half. And somewhere nearby was Vika. That was what, she was here, here in this city.

The credits flashed by, music sounded and broke off, the actors began their business. They had their own cares.

On the desk a telephone gleamed in the dark. He could stretch out his hand, dial information, no, any hospitl woul do, and in a minute or two he would have Vika's telephone number. After that, a moment later, he would be able to hear her voice. And he could talk with her. What about? And most important, why? And

what was she like now? In front of his eyes, frighteningly, rose the image of the fat, elderly woman in the cutting room. That was how simple and that was how complicated everything was. He wasn't going to phone anyone.

Vasin settled himself more comfortably into the chair, settled himself in such a way that the telephone would not draw his gaze. In the gloom the room appeared to be luxurious. It seemed especially luxurious because on the screen everyday life was unfolding without being prettied up. Good man, Rishat, he looks attentively at people. He develops the action visually, not just through dialogue. And the snowstorm is the real thing, filmed on location, not on some comfortable, make-believe set. Must have been hard going for film crew and actors alike, freezing conditions . . . Must ask Rishat how he achieved that effect . . . And his cameraman is a real one, with a sure and honest eye. It's good to be a director, a director does not have to work on his own, if he's lucky he's got a talented crew backing him up. The scriptwriter always works alone, always alone. And if in weakness he chooses the easy way out, there is no one to stop him. And if he becomes all tangled up there is no one to give him a helping hand. God, what nonsense all this is. It's good to be a screenwriter too, with luck.

So, he phones Vika. So, he meets her. And what will he tell her about himself? What can he pride himself on? After 23 years of life a man should have something to show for it. List his documentary screen credits, his one-reel and two-reel productions? Sonya had said: "We're all proud of our Vika . . ." Good, all the best to her, but he wouldn't phone her.

But had he arrived in this city in search of praise? He was sitting here, watching this film, while somewhere nearby there was Vika. He had found her, she was here, and he spent his time watching a film and expounding to himself. He should be flying to her and instead he sat staring at a wall on which tortured people had been driven into the dimensions of a small screen. What was this film all about? Why had Rishat felt he had to make it? Because it was about the important things, that was why. About love and courage, about hardships and betrayal and baseness. Just lookt at the things it has encompassed.

The door opened and Rishat entered. Without saying anything he began to draw open the curtains and sunlight burst into the room. And still the steppe greyed into the distance and still the snow swirled and silent people who shared love and hate rose before the mind's eye.

Vasin went up to Rishat intending to embrace him, as was the custom after a screening, and to pronounce those honeyed words which required no thought and slipped so easily off the tongue

from frequent repetition. But the film was genuine, there was no need to lie.

"You know yourself," Vasin said. "You know it all yourself, Rishat. And I must run. Just think, Sonya told me that Vika lives here, right bere. Did you know Vika? A little redhead? I have to hurry and find her. Please don't be angry."

"Sonya asked me to give you this," Rishat said and handed Vasin a scrap of paper. "No, I didn't know a red-haired Vika at tbe time. But I know Dr. Veronika Levina very well. She cut out my son's appendix. It was a nasty case. Well, off you go. Thanks for looking at the picture."

And then they did embrace on parting.

On Sonya's note there were no words, only five numerals. Five numerals—Vika's telephone number. Vasin had no doubts on that score. And if he went into the first telephone booth he saw and dialed those five digits, then after the first, the second, the third ring, he would hear Vika's voice. They had never talked on the phone. Neither had had a telephone number where they could be reached. They had sent notes to each other, such as this one, setting dates. And why had Rishat, when speaking of Vika, called her by some other name? Why Levina and not Usoltseva? How was that? Her husband's surname. Naturally, she was married. And there was nothing to say that the telephone would be answered by Vika and not by her husband, some Levin. And there was nothing to say that Vika would be pleased by his call.

Vasin became furious with Sonya. Furious because of the past as well as the present. He remembered long, long ago, how Sonya had tried to patch things up between him and Vika. She tried so hard she only made it worse. But why had they quarrelled? What had come between them? He couldn't remember. Something trifling. They had quarrelled frequently. He had been arrogant and she, proud. They had quarrelled for a day and it turned out to be for good. He was called up just at that point. She had dashed to the station to see him off as soon as she heard. But even in that moment of parting he had been stupid and overbearing. The world was opening before him. He was going to war. What did he want with some Vika.

Vika answered the telephone. Her voice sounded as though they had left each other only yesterday. Her voice was the same, time had not touched it. Vasin was so astounded, it seemed like such a miracle to him,that he could find no words to reply to hers: "Hello, hello . . . Who's calling, please? Hello . . ." He did not answer. Then Vika smiled — he saw her smile — and said:

"Volodya, is it you? Sonya phoned me an hour ago and told me. I've been waiting for your

call. Sitting and waiting. I'm up to my ears in work and I've been sitting by the telephone like a silly girl. Well, hello Volodya Vasin. . ."

"Hello, Vika."

"By what miracle are you here? Business?"

"No, not business. Just suddenly felt like seeing the town once more. Simply to walk around the streets. That's all."

"You felt like taking a second look at your youth?"

"Yes."

"That doesn't sound very cheerful."

"I'm not."

"I'd like to see you very much. I can't even understand how it is, but I want to very much."

"Come, I'm here."

"Where?"

"From the telephone booth I can see the park and the church. I'm here for the second time today."

"And did you sit on our bench?"

"Yes, I did."

"Oh, Volodya, dear Volodya, you're unhappy."

"How did you know?"

"I just knew. All right, wait for me—by the bench. I won't be long."

He walked toward the church. He walked toward the only landmark that existed for him in the city, toward the crosses on top of the church. It was not far away. Only recently he had strolled along this road. A few hours ago he had not even thought of meeting her. But the only reason he had come to the city was to see her. He had not admitted it to himself, but it was so, that was what bad lived within him, had directed his actions. It hadn't been a drunken whim. Hope had driven him, hope of seeing Vika.

Vasin came up to the bench, to "their bench" and looked round, wondering from which direction she would come.

In the event he was wrong. He had expected her to appear from tbe side where the tram stop was, as she had in the past. He searched for her in the crowds strolling down the avenue, but she came from behind the church, cutting across the grass and called when she was already quite close to him.

Vasin turned instantaneously on hearing her voice and found himself face to face with her — with this woman who resembled Vika so much, but only resembled, nothing more. Once again her voice shook him, her voice out of the past, but Vika herself was different. The flame of her hair had dimmed, quenched by grey. She was softer in every way. Her fragility, lightness, angularity had disappearred. She was a matronly woman, still beautiful, not at all old, only her eyes, though still a magnificent blue, had faded. She was a stranger and yet familiar, familiar and yet a stranger.

"You've hardly changed," Vasin said.

"Don't lie," she said.

They set off for a cafe. Vasin

immediately pulled her along, seeing there was one nearby. Where else would they go? The confusion of the first few moments would be easiest overcome by having an aim. Vasin's aim became to reach the cafe, find a table, order something.

He was lucky about the table. He found one off to the side, in a corner, and set only for two. And the waitress turned out to be pleasant and friendly. Everything was working out. It was not even hard for him to meet her eyes. She was not mocking him, he read no distress in those serious depths gazing at him. Well, and so they had met. And they were sitting opposite each other. How amusing, he and she, after some mere 23 years.

"We imagined many things, one time, but we never imagined such a meeting taking place in our lives," Vasin said.

The phrase was well-turned and more or less to the point and he was prepared to develop the thought. They had to talk about something. Once they had met and sat down at a table, the conversation would be a long one.

"Do you remember, Vika . . ."

She did not give him the chance to tell her what it was she should remember. She stretched out her hand and touched the lapel of his jacket, touched the pin in the lapel that indicated Vasin was no ordinary mortal, but one of those who control men's minds.

"It's a pretty pin," Vika said without smiling. "So what do you do in your movies?"

Pricking himself painfully, Vasin tore off the pin.

"How could I have forgotten it?!"

Vika took the pin that he did not know what to do witb from him.

"Films . . . Are you still as fascinated by them?"

"I do my best. I make documentaries. I don't make up stories. I tell about what I have seen."

"Interesting, very interesting."

"Truly?"

"You have the same smile," Vika said. "That's good. You must be attractive to women. Are you married?"

"I was. Divorced."

"Children?"

"No children."

"Too bad. I have two sons. Would you like to meet them?"

"Very much. Vika, tell me, can you remember what it was we quarrelled about?"

"Is it all that important now, Volodya?"

"I just can't remember."

"Probably I was trying to convince you of something. And you didn't know how to listen."

"That means you too, have forgotten?"

"It's not worth it. What's the point?"

"Don't be angry with me. Forgive me, Vika."

"I forgave you long ago, Volodya. Long, long ago."

They drank. Vika could drink. Vika could do anything. She could live a whole life without him. Vasin downed his brandy and fell silent. If he had spoken, his voice would have cracked.

They did not sit around long. They became oppressed by the conversation between drinks, by the tradition of it all, by the alcoholic haze. Vika broke off the talk and rose from the table.

"Come on," she said, "let's go for a walk. It's stuffy in here. And stupid."

They crossed the park, taking the same path they had walked when Vika used to see him off to his classes. But they did not walk up the hill.

"I've already been up there," Vasin said.

"Well, tell me, Volodya, how was the war?"

"Ordinary. I didn't become a hero. I was a little late for the war, after all."

"And I've never been able to make out whether I was in the war or not. The siege of Leningrad — was that war? When I worked as an orderly and then a nurse in a base hospital — was that war? And after the wr, when I became a doctor and the cripples began to come and come — was that war or not?"

"It was war, Vika. You fought."

"But to say I fought, I can't. I just lived during the war, worked during the war, loved during the war. I loved you, Volodya. How was it you forgot me, didn't look for me? You have nothing to say. And the years have chewed everything up. Later I hated you. That passed too."

"Sonya told me that after the war you returned to Leningrad. Any of your relatives survive?"

"No. Even the building where we lived was rebuilt beyond recognition. I lived there in a hostel for medical personal. I had already received my doctor's degree by that time but I wanted to specialise in surgery."

"I never thought of you as being a surgeon."

"Why not? Did you think I was too weak?"

He did not reply. They walked side by side and out of the corner of his eye Vasin covertly watched her. He wanted to race his memory back to the days when he had strolled with her and she had been slender and he had wanted to support her heavy red hair with his hands. This very morning he had pictured that Vika. And he had pictured himself as he had been then. But now, walking beside her, he could not picture her former self. The present Vika was alien to him, a strange woman who in some way knew of his youth. And now she was catching up on his later life, while he questioned her about hers. They did so by the rights of former closeness, but everything was forgotten, everything was over. It was bitter. Bitter gall. He was losing Vika, losing her completely, even the memory of her would be obscured by this Vika, this stranger.

"Well, and who is your husband?" Vasin had intended to ask

her for some moments. It was time to ask the question.

"He died, Volodya. Almost two years ago."

"I see."

They walked side by side, he held her arm lightly, her shoulder now and then touched his. And she was alien to him, an instant ago she was someone else's wife by whom she had two sons. But now Vasin learned that other one had died, learned that now she belonged to no one. She walked beside him and he held her arm and her body brushed his. An instant ago everything had been hopelessly simple. Now everything was becoming hopelessly complex. Vika had come back to him after all those years. And he to her. No one else stood in their way. They were free to come together. Not quite — all those years stood in their way, those years lived without each other.

"Did you love your husband?" Vasin asked. If she replied that she had, he would be upset. If she replied that she had not, he would be scared.

"Yes," Vika answered. "He was much older than I."

"And he, did he love you? Of course, he must have loved you."

"He loved our sons."

No, the years had not been kind to Vika. Look at the wrinkles around her eyes.

"Stop examining me," she said. "I don't need anyone."

She freed her arm and stopped, facing him. Her gaze was mocking. The wrinkles he had just noticed had disappeared. New ones showed up. The others had been lines of grief, these were of mockery. And somewhere in her face were other lines, created most likely, when she became a surgeon. The years were etched, the years that now rose between them.

"Well, Vasin, where shall we go now? Shall I show you the city? It's changed greatly. You know, I love this town."

"It's a beautiful town. You were going to introduce me to your sons."

It was not far to her home. She lived on the same street as the hotel was located. It turned out that the two of them lived on the same street. That very morning he had passed Vika's apartment house. She went up the staircase before him, her pace slowing down visibly, as though she were thinking things over or the steps were too much for her. Suddenly she stopped and turned to Vasin.

"The elder one is a nervous boy," she said.

Vasin nodded in understanding.

"He can't accept his father's death. They were very close."

Vasin nodded again. The evening in store was not going to be easy.

"Well, come in, Volodya." Vika opened the door. Immediately, two boys materialised. One was tall and thin, the other short and round. And both had flaming red hair, their mother's hair, Vika's hair, not the present Vika's, but Vika's in the past.

"Boys, I'd like you to meet an old friend."

The two stared at Vasin. The roly-poly one shook hands at once. The eldest did not offer his hand. He had his mother's great eyes and manner of raising them.

The mother bent down and murmured something, or perhaps did nothing more than brush her lips against his temple. The boy glowed at the caress. He also offered Vasin his hand.

The hallway was wide, the flat large. The young lad jumped on a tricycle and ringing the bell with all his might sped away somewhere. The other one remained with the adults. While his mother combed her hair in front of a mirror, he led their guest through to a sizeable room with a dining table placed in the centre. The table was just being circumnavigated by his brother, who cheerfully waved to Vasin and then cycled out, through yet another door. Everything in the house had quality, the furniture, the rug which covered the whole floor, the paintings on the wall. And order was not maintained at the boys' expense. Their toys lay scattered about, the chairs were moved back to give room to the cyclist. Vika's touch could be discerned in the neat disorder. She was a freedom-loving person.

But there was another unusual feature in the room which at first glance Vasin did not take in. A large portrait of a man hung on the wall opposite the door. There could be no doubt that the broad-shouldered, merry-eyed man with arched eyebrows, was Vika's husband. The little fellow who had just scooted past them confirmed the fact in his sturdy shoulders, his cheerful countenance and his eyebrows, red, like his mother's, but arched, like his father's. The portrait had been done by an indifferent artist, an artist who had been overpainstaking. Nevertheless, you could not help but be aware of the life-force and strength in Vika's husband. A surgeon? Most probably. A man such as that could instill faith in himself.

One other portrait of the man hung on the wall in the same room. This one had been woven into a rug and was bordered by Turkmen designs. The likeness was approximate, only the eyes had been caught by the weaver and they twinkled gaily and irrepressibly. But the man was dead. So why was his image all over the place? The constant reminder would serve only to deepen the loss. And still another picture of him stood on the piano, a photograph taken of him with his sons.

"That's my father," the elder boy said. He had been watching Vasin taking stock. "And this is his place at the table." The boy went up to the chair — which had not been moved back — and touched it, caressed the back of it as though it were a live thing. "We don't sit on this chair," the boy said and looked at Vasin sternly.

"What is your name?" Vasin asked, averting his eyes.

"Volodya."

"I see."

Vika came in.

"You're looking around? I suppose you've condemned the paintings? We're not art experts, we're doctors. Yes, that's my husband. The rug portrait was woven in Ashkhabad. He saved an almost hopeless case and the rug was a token of gratitude. Grigori never accepted presents, but the portrait... he couldn't resist. Sit down, Volodya. The kettle will boil in a moment and we'll have tea with the children."

"He's also Volodya?" he asked.

"Yes, he's also Volodya," the mother said and suddenly colour suffused her neck and face. To flush so hopelessly, so betrayingly, is the misfortune of redheads.

The younger one arrived in a flurry of dinging and shouting. He had not turned up without purpose. He brought Vasin a toy and demanded:

"Fix it!"

Vasin took the toy, glad of the distraction. The boy and he pulled up chairs and sat down at the table. Vasin examined the plastic steam-engine. The front wheel had sprung out of its slot. Vasin was happy, the repair-work should not be beyond his powers. The child breathed over his hands, expecting a miracle believing in Vasin like in God. Vasin bent and almost touched the boy's head with his lips. His hair smelled of the sun, the little flaming head like a little sun. But the steam-engine would not behave. The wheels kept popping out of their slot. It needed just the right pressure of knowing fingers to snap them in place.

"Well!" the boy urged.

Vasin pressed and something cracked. And something in his heart lurched. Had he broken it? It seemed not. The wheels turned, it seemed he had fixed it. But he had no faith that he had. He had heard something crack. Vasin did not have the courage to examine his handiwork. He handed it to the boy.

"All done."

The boy believed him, naturally. For two or three minutes already he had considered this man his friend. He believed in him and did not need to turn the wheels to try them out.

"I have other cripples," he said. "Will you fix them?"

"Certainly."

"My papa used to fix them in a minute."

"Can you remember your father?"

"Of course. There he is, my papa." He pointed in turn to all the portraits. "There he is, there he is, there he is."

A tall old woman came in, carrying a tray with teapots and bowls. She had an angry face, no, not angry, but she was examining him distrustfully. She stared at him. What kind of guest had been sent them? Not everyone had the right to penetrate into this house.

Not everyone had the right to stretch out a hand to her mistress.

Vasin withstood her gaze very well and even smiled broadly. But in answer to his wide smile she only pursed her lips. A grim woman! Unbribable! Nevertheless she nodded to him, thawing slightly. Whatever he was, he had a nice smile.

"Have some tea," the old lady offered. "We drink it local style, out of bowls. Whosever bread you eat, his customs you should keep."

"Our Maria Petrovna likes her little aphorism," Vika said. Only now had the deep flush ebbed away. But she did not meet her eldest son's eyes. She really had no time, she had to set out the tea things, spoon out the jam.

The old woman moved away into a corner and sat herself down to observe Vasin. She brought all her woman's instinct and life experience to bear on the subject. The young man put her on guard. He was no new acquaintance, but a man out of the past. It was obvious that the mistress was not herself, her capable hands appeared helpless. And she would not look at her son, nor he at her. Oh, if only she didn't make a terrible mistake...

"You must try our honey," the old woman said in honeyed tones. "You won't get honey like this in your parts. It's from the mountains and smells of the sky. And what part of the country do you come from?"

"He's from Moscow," Vika said. "He's a film-maker. At least he's one of the people who helps to create a film. Maria Petrovna is very fond of movies. She never misses a new one."

"I don't like films," the older boy said. "I like the circus. You have to be brave in the circus."

"But that's not true," Maria Petrovna said, acting surprised. "You go to all the pictures with me. Sometimes three times. The circus, that goes without saying, but you lied about the pictures."

The boy began to redden, just like his mother. His whole face, his neck were suffused with colour.

"I don't like films," he repeated and his lips turned white, he had clenched them so hard.

"All right, you don't like them," the old lady said soothingly. "Do have some honey."

The smaller child passed Vasin the whole jar of honey.

"Eat a lot of it," he advised. "I like films. I like films about horses and dogs. Do you have a dog?"

"No," Vasin said, "but you know, today I went to the zoo."

"To our zoo?" Vika asked. "What came over you?"

"Just by accident. Everything by accident."

"I want to go to the zoo too," the little boy said. "Let's you and I go tomorrow. All right?"

"Agreed. Don't you feel sorry for the animals in the cages?"

"Not for all of them."

"Which do you feel sorry for and which not?"

"I'll see tomorrow. I haven't

thought about it yet. I'm sorry for the lion."

"I was sorry for him too."

"The lion should be let out," the little fellow said decidedly. "Lions don't bite."

Vasin looked at Vika.

"You've got nice youngsters."

She didn't say anything, only screwed up her eyes in agreement.

"Are you an athlere?" the older boy asked, as though from a distance, unwillingly.

He put the question for his mother's sake: he had to say something in order to be polite. "I mean before, when you were young. My father was an athlete. He played volleyball and tennis."

"Volodya, you were in the institute volleyball team, weren't you?" Vika asked.

"Was it a good team?" Volodya-the-child wanted to know.

"It was top of the institute league in Alma-Ata for two years."

"Are you from Alma-Ata then?"

"I studied here. A long time ago."

"And mother studied here. Was that when you met?"

Vasin and Vika's eyes mer. She smiled at him encouragingly. Somewhere in the depths, the very depths of her eyes, sparkled Vika's mischievous glance of old. Just get out of that one, Vasin!

"And you, have you decided to go in for volleyball?" Vasin asked Volodya.

"I put my name down for volleyball. I got to volleyball training sessions. Do you think I'll ever become a good player?"

Here was his chance to get in the boy's good graces, to say something he would like to hear. Say to him, certainly, why not, you've got what it takes, height, muscled arms... But the boy hadn't. He was tall but thin, weak-looking, with narrow shoulders. The boy would have to perform a miracle in order to become a good athlete. Vasin couldn't bring himself to deceive him. And Vika was right there and the old woman.

"On the surface, it's not likely, Volodya. Height is not everything. You must develop your arms, legs, quick reactions. But if you have will power, you can achieve these things. If you have will power you can achieve anything."

"That's what the coach tells me," the boy answered. For the first time during the conversation the boy looked at him candidly. "I have will power, I can do it."

"He has his father's character," the old woman commented. "For that matter, his mother's not chicken-hearted."

Vika gave a wry laugh. "No, I wouldn't say I was."

The old lady suddenly bustled to her feet.

"Goodness, to bed, children, to bed. It's pitch black outside and you're still up and about. You think your mother has nothing better to do than to fuss with you from morn till night? Perhaps she's got business to talk over with her visitor. Come on, get along with you!"

The boys obediently rose to their feet. Rather willingly in fact. The eldest because he did not find it easy at the table. The youngest because "bed" meant that morning would come sooner. And in the morning, tomorrow, he would go to the zoo with his newfound friend. Comprehending that this was the moment to make sure, he asked his friend:

"And in the morning we'll go to the zoo?"

"Certainly," Vasin replied.

The little fellow went off with the old lady but the other boy lingered. He wasn't sure how he should behave, what he should say in parting, whether he should shake hands.

Vasin himself held out his hand and shook the boy's slender one. No, he didn't have the physical characteristics needed to make a volleyball player.

"You'll see, I'll do it," the child said. "My father wasn't strong at first either."

The boy left the room, saying good-night to his father with his eyes. His father was on every wall, he was everywhere, he was with him — with his son. He encouraged him with his determined, cheerful gaze.

Vasin and Vika were alone. Now they could talk, now they could really talk. But the preceding conversation had been too difficult and now it did not come. It happens that way: you arrive with plans to talk about somerhing but the conversation takes a different turn and all your plans are thwarted. Vasin knew this and knew also that now nothing would help. Vika probably knew it too. She lowered her head, tired and silent. He couldn't even touch her. She would bave been surprised if he had. And from everywhere the eyes of her husband watched him. He was dead? The eyes of a dead man? He was dead and yet not dead, that man. He lived on in Vika's memory, in the memories of his sons. He lived and was still master of this house. He was consulted, he was an example.

Vasin got up. "It's time for me as well."

She did not keep him. She opened the door to the landing and followed him out and for some reason pulled the door to. She did not shut it but she pulled it to. It was dark on the landing, only the narrow strip of light from the chink fell across the floor. Vasin raised his arm, uncertain in the darkness, and Vika was in the crook of the arm. He brought her close then, unbelieving that he dared. She did not resist. Then he found her lips and she did not refuse. Nothing had changed! The landing, the strip of light — this bad been before!

"Vika," he said, "Vika..."

Sbe reached out and pushed open the door. The light struck them in the face.

"I don't know, I don't know," she said, "whether it's possible?"

And he did not know, did not know what to say.

"You'd better go, Volodya," Vika said, "please go..."

He turned and ran down the stairs. He ran away like a boy escaping. And before? Had he escaped before? No! And she had not said to him then, "Go, Volodya, please go . . ."

The city was in the grip of night, a night that had appeared out of nowhere. Vasin had lived through the whole day from morning to night without noticing time pass. He couldn't remember when he had lived through a day without being oppressed by boredom or the need to live in expectation of something. He had flung himself through this day as though crossing a field under fire, reeling from explosions and aware of nothing else.

It was a beautiful town. He could just take the notion to settle here. After all, he had lived here at one time. Lived here when there were no such tall buildings, such lights, when times were hungry and miserable. He had lived and dreamed of such a city of abundance, of light, of modern building standing on broad avenues. Everything had come to pass — here it was, the city of his dreams. All he had to do was stay here. And his Vika was here. And she was even free. He could return to her. Make friends with her sons. Not in a day, but it could be done. And then, and then . . . But wasn't it too late? And how would he enter her home? By what right? The right of the past? He had no such right. How would he enter that home where another's portraits were everywhere and when that other one was a real man?

Vasin drove himself forward, hastened to put distance between himself and Vika. Otherwise he might turn back. And what could he bring with him? What could he say?

Vasin rushed upstairs to his room and was momentarily shocked by the hot, stuffy air. He had forgotten to leave the door to the balcony open when he left in the morning with Rishat. How long ago it seemed — the chance meeting, the screening. It seemed hard to believe that everything had taken place that same day; the institute, the zoo, the studio, the cutting room where he had run into Sonya.

He wasn't sleepy. He sat at the small desk which invitingly beckoned him to work. As a matter of fact, all desks in hotels had that effect because no one actually worked at them. That's why it always seemed that it would be easy to begin. To sit down and begin something real. Right now, on the sheets of paper provided by the management. Not too many of them, but quite enough to begin with. The white sheets of paper were like mountains, like mountain peaks to be scaled.

Vasin fell into a reverie. He picked up a pen and considered. He even felt inspired. There was much he could write about. After all, he had experienced a lot in the course of his life. He had lived many lives. And suddenly, as

though struck, he recalled his dreary thoughts of yeasterday. He could have lived a different life! If he had not left his first institute his life would have been different. If he had not been evacuated from the front around Moscow, everything would have been different. If he had not deserted Vika, his life would have been quite different. And this last, this once possible life with Vika, seemed so attractive, so right, the only true course, that Vasin inwardly howled with anguish, like a caged animal remembering the fatal mistake, the instant when he had been lured by a hit of bait into the trap.

Vasin lay down, hoping to sleep. No matter how bad the dreams he might dream, they could not be worse than reality. How could he get to sleep? He began to count. In childhood it had helped. He counted on and on, but sleep did not come. Vasin gave up. He realised that the night would pass in such fashion — dark thoughts would wash over him but there would be no sleep. But he did sleep. As soon as he accepted that he would not sleep, he did. And he was lucky. He had pleasant dreams. He dreamed that he was strolling in the park with Vika's sons, strolling past the different rides. "Shall we go on one?" the eldest asked. "Let's," Vasin replied. And they chose the "Nesterov Loop", tbe most terrifying of all the rides. Volodya-the-child is frightened, but Big Volodya — not a bit. And he instills courage in the lad. They fly up into tbe sky and turn upside down and it is exhilarating and a little frightening but on his knees he holds the slender boy and the child's hands grasp his tightly and the cbild is Vika's son. Vasin bends towards him, touches his red hair which smells of the sun. "Don't be afraid," Vasin shouts. And then he goes with his red-heads to the zoo. Now he can show off to Vika's youngest. All the child bas to do is point and Vasin the magician throws open the door of a cage. His hands are so clever that no lock holds any secrets for him. And the animals come out. The deer come out and the hears. They bow their proud heads gratefully and then take a breath of sweet air and set off for the mountains, leaping, bounding or lumbering along. And the lion, the lion crosses the threshold of his cage. A marvellous lion! A wonderful, majestic lion! It was only in the cage that he seemed so pitiful, once out he was transformed. A golden lion, one paw raised in the air. A golden lion like a first prize. The live lion raced off to the hills and in his hands he clutched a golden lion. What was surprising about that? But whistles sound on all sides and guards rush up because it is not allowed to free the animals. It is forbidden!

* * *

In the morning Vasin took the first flight back to Moscow. He was not able to say good-bye to Vika and her sons. The plane was very early and he could not wait for the next one. He did not know why he couldn't, hut he couldn't.

All the way, for the whole five hours, Vasin composed a letter to Vika and her sons. He had to explain why he suddenly left without saying good-bye. He had promised to take the children to the zoo in the morning. He was tortured by the fact that he had deceived them, had not carried out his promise.

The letter refused to come out right. He tried writing about this and tried writing ahout that. He tried writing humorously and tried writing seriously. But the letter didn't come off.

And here he was in Moscow. He got out of the taxi at the corner before his apartment building. He stood on the corner. Oh, to go back there, to the mountains! And suddenly the words came, the words he had sought for in his letter to Vika. He would write her, he would send a telegram immediately. Only a few words: "I will he back, Vika. I will write something worthwhile and be back. Definitely. Then we will go to the zoo with the children and I will fix all the toys." That was the telegram he wanted to send. Vasin repeated it all to himself in order to fix the words in his mind and started off, hastened to the nearest telegrapb office.

PUSHKIN THE PUGILIST

The great Russian poet Alexander Pushkin was one of the first people in the country to master the art of hoxing. He was not only a fine boxer himself, but he willingly taught his skill to others. In his memoirs Prince Vyazemsky wrote: "In 1827 Pushkin taught me to box..."

G. O. M. TOLSTOY

When he was teaching at the school he opened for the local children at Yasnaya Polyana, Tolstoy used to delight the pupils with his exercises on the horizontal bar, his easy springs over the horse, and the negligent way he hoisted a 72 lh weight. At 68 he organised a race between himself and the well-known pianist Alexander Goldenweiser, who was twenty at the time. Tolstoy won.

Letters to the Editor

Continued from p. 5

I would like to make the acquaintance of readers of SPUTNIK from Great Britain. I like music, books, art, sports, especially swimming, and I collect viewcards. Can correspond in English and Russian.

Ina Popova, H. Stamat 49, Varna, Bulgaria

I wish to have pen-friends all over the world. I am a student and this year I will appear at the S.S.C. exams. My hobbies are: stamp collecting, discussing current affairs of the world, photography, social activities, cinema and music.

Syed Belayet Hossain, 2/13 Noorjhahan Road, Mohammadpur, Dacca, East Pakistan

I am greatly interested in foreign pen-pals. I am a 16 year old Danish girl. Among others my hobbies are: music, cinema, literature, history, geography, stamp and postcard collecting.

Bente Sanhof, Gasseholmvej 89, 2730 Herlev, Denmark

I am very much interested in correspondence with boys and girls from the European countries. I am a student aged 19 and am collecting stamps. Those interested write me in English.

Fadhil Abdulla, Refai, Nassriah, Iraq

I am eager to have pen-friends from all over the world. My age is 15 and I know Russian, English and Polish. I like drawing and sport and I collect stamps and postcards.

Wieslawa Mendyk, ul. Pogodna 10, Sopot, Poland

I am a 17 year old student and I would like to correspond with young people of my own age from different parts of the world. Know French and English.

Bennegaz Abd-El-Kader, 12 Rue Pascal, Oran, Algeria

I am 48 years of age and I would like to correspond with people who speak and write English. I work for the Department of Social Service of the State of New York, as a typist. I like travel, people and dogs. I have a garden too.

John Carter, 176 Hicks Street, Brooklyn, N. Y. 11201, U.S.A.

I am 16 years old and I am interested in collecting viewcards and in correspondence with friends from various countries. I know Hungarian, English and Russian.

Erzsebet Solyom, Bolyai ut. 7/a, II 9, Debrecen, Hungary

We desire to have pen-friends in foreign countries.

Our main interests are photography and drawing.

V. S. Ramamurthy, and K. Swaminathan, 19 West Bock Fort, Trichinopoly 2, Madras State, South India

I am aged 20 and would like to write to an English speaking woman. I am a college student and my hobbies include reading books.

Miss R. Mohanambal, same address as above

I would like to have pen-pals all over the world. I am 19 years old and interested in viewcards and stamp collecting. Speak only English.

Miss Leelamani Silva, 67 Kadawata Road, Dehiwala, Ceylon

I would very much like to get friends from Ceylon, Japan, China, Pakistan, U.A.R. and East-European countries. My age is 24 and I am a member of the Communist Party of Great Britain. I am a factory worker.

Peter M. Lee, 65 Swinley Gardens, Newcastle-on-Tyne, NE 15 7HX, England

I would like to exchange ideas with young people from different countries of the whole world. I am fond of music, especially Italian classic music, and am also interested in literature, cinema and stamp collecting. But I prefer record collecting. Can correspond in Russian, English, Italian and a little in French.

Slav Kostov, 21A Petko D. Petkov Street, Russe, Bulgaria

I am an 18-year old girl, collecting picture postcards. I want to exchange postcards with people from all over the world.

Gerlinde Tomansky, Glarmata 427, jd. Timis, Romania

I would like to have pen-pals in as many countries as possible. I am interested in chemistry, reading books and magazines, music and chess. I am also collecting stamps.

Issam S. Khatib, 104 Personnally Bouse, Nazareth, Israel

I am eager to get pen-friends from all over the world. I am 20 years old. My interests include music, reading and photography. Unfortunately, I can write only English.

Ijaz Ahmad, P. O. Rojhan, District D. G. Khan, West Pakistan

I am a school-girl in the 10th class. I am seeking pen-pals from different parts of the world who can write in Russian, English or German. I collect stamps and viewcards and I am fond of music and books.

Karin Grunert, Bernsdorfer Str. 90, 90 Karl-Marx-Stadt, GDR

I want pen-friends from all over the world and especially from West Europe, U.S.A. and Greece. I am 20 years old and my interests are music, books, stamps and postcards. I know only English.

Mg Kyaw Htay, No. 41 U Phee St., San Chaung, Rangoon, Burma

I would like to know more about the life of youth outside Poland. Can correspond in Russian, English, Spanish and Polish. My age is 24 and I am an engineer-geodesist. I prefer student pen-friends from South America and the Middle East. I like sports, travel, beat-music, cinema and I collect viewcards and records.

Stanislaw Nowak, ul. Sokolska 30, Legnica, Poland

I wish to have pen-pals in all parts of the globe. I am a boy of 20 graduating in science. I would like to correspond on matters of general interest. Some of my hobbies are: music, hunting, cinema, sports and books. Can write in English.

Arshad Ansari, 5 8-48 Fateh Sultan Lane, Byderabad-1, India

My age is 22 and my interests are varied: reading, cinema, theatre, travel, modern music. I collect stamps, viewcards and jazz-band photos. I can correspond in Russian, English, German and French.

Peter Borisov, Aprilsko Vastanie 17, Sofia-20, Bulgaria

I am greatly interested in getting pen-friends from the whole world. My age is 19 and I collect stamps, viewcards, photos. Can correspond in English.

Ishor Thaiba, Bhagawati Tole, Tansen, Lumbani Zone, Nepal

I would like to hear from your European readers, particularly in the 18—25 years age group, who can write in either English or German. Those writers who enclose their photos will be answered first. However I shall reply to all the letters received.

Alfred J. Gleason, P. O. Box 2002, Great Falls, Montana 59401, U.S.A.

I am eager to correspond with young people from the whole world, who have the same interests as me. I am fond of poetry, sports and I collect stamps. Can write in English, French and Arabic. I am an Algerian student.

Gaouar Nesraddine, Club des Etudiants Algeriens, 6 Rue Bank Misr, Le Caire, U.A.R.

SIBERIA LOOK FORWARD...

Continued from p. 70

the land for the first time, acquired new skills in hunting and cattle-breeding, and took over some of the rudiments of civilisation. Traces of the mixed marriages which frequently occurred can be seen in the features of many modern Siberians.

Soon after the 1917 socialist revolution, the new Soviet Government granted all more or less compact Siberian national groups autonomy, and offered them the possibility of developing their traditional cultures. As a starting point written languages, which had not previously existed, were devised and along with compulsory schooling the small nationalities were given the possibility of developing their arts.

National tbeatres were set up, including opera and ballet theatres. The national minorities had been on their way to extinction as a result of poverty and disease, but in Soviet times they have registered sharp increases in numbers.

Siberia's present-day population is in the order of some 20 million, mostly Russians. But the greater part of Siberia is occupied by territorial formations of the indigenous nationalities such as the Yakut Autonomous Republic with its 1,160,000 sq. miles of territory, or one-seventh of all Soviet territory, the Buryat and Tuva Autonomous Republics, seven national districts and two autonomous regions of other nationalities.

Illiteracy has become a thing of the past; the entire younger generation attend school, including technical schools, and the most capable go on to colleges or universities. Even the smallest village has its certificated specialists from among members of the Siberian national minorities, not to mention the large cities.

* * *

From year to year, Siberia occupies a more important place in Soviet national economic development plans providing for accelerated advance of the productive forces, intensified mining and processing of minerals, the building of oil pipelines and transport routes, and the progress of agriculture.

From year to year, the silent tundra, the impassable taiga and the boundless steppe yield their secrets and wealth in larger quantities to the inquiring human mind and tireless human hands, as factories, mines, vast expanses of ploughland, power stations, cities and townships extend in every direction.

There can be no doubt that Siberia will step into the twenty-first century as a vast civilised country providing vast wealth for its people.